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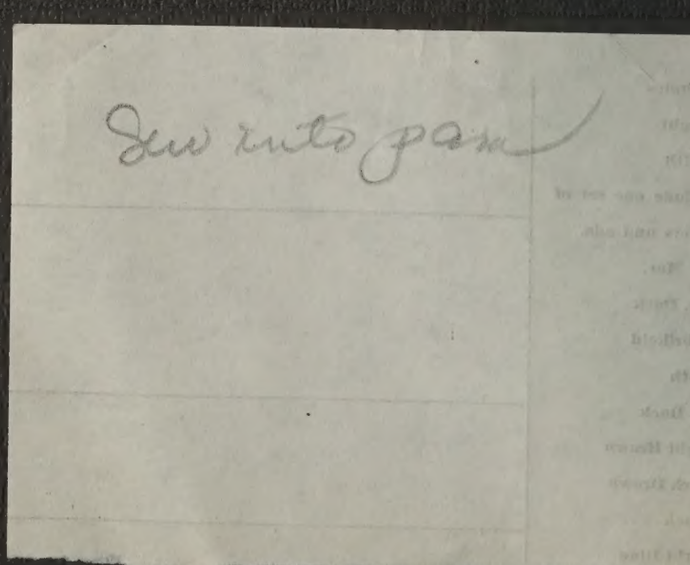
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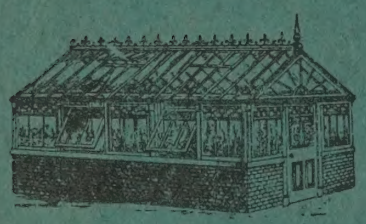

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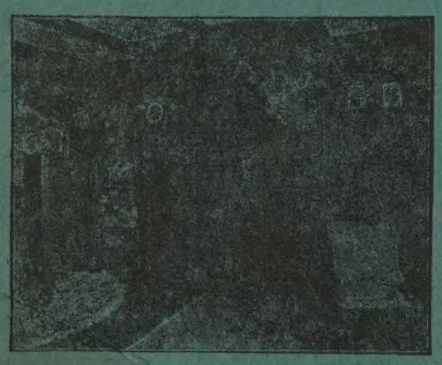

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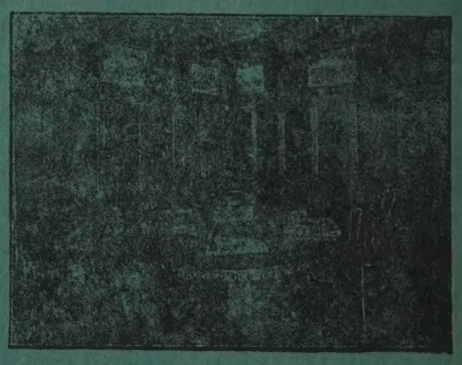

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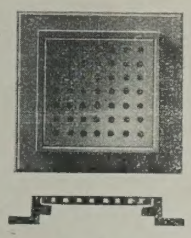

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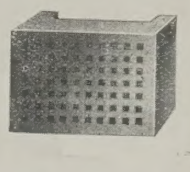

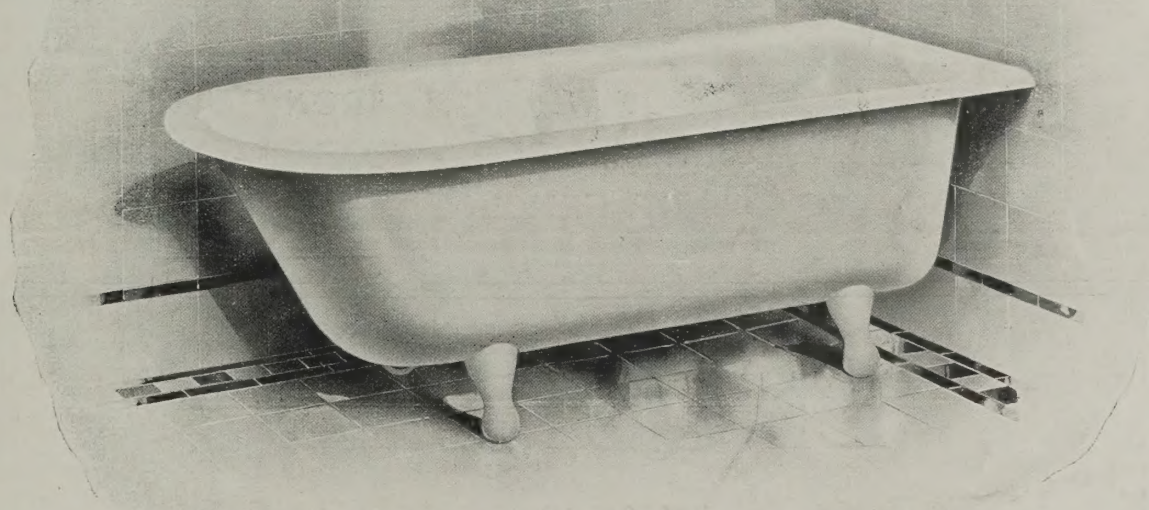

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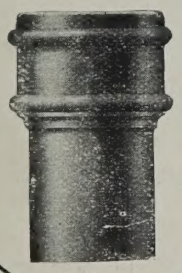

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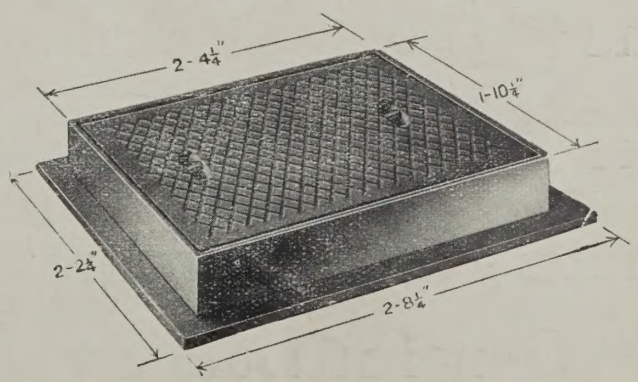

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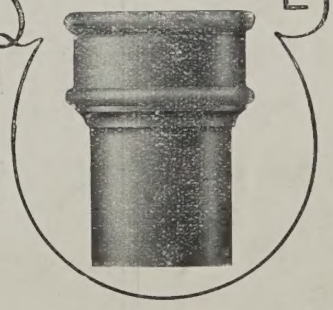

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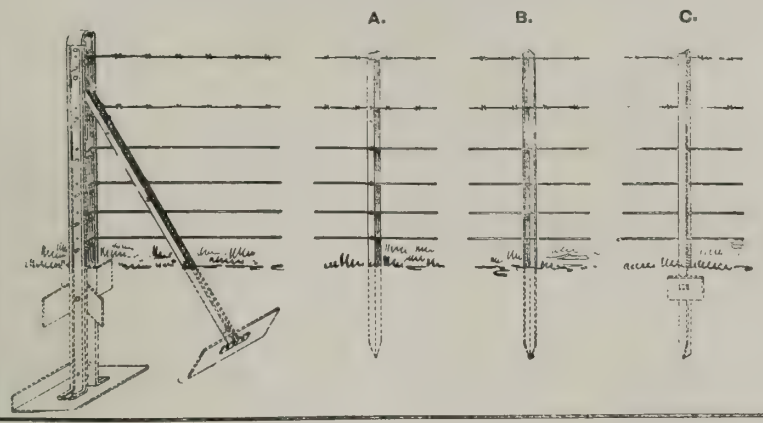

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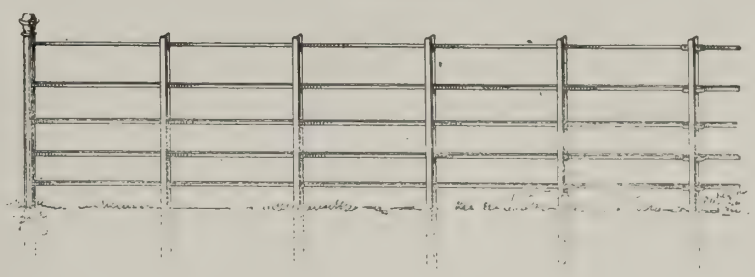

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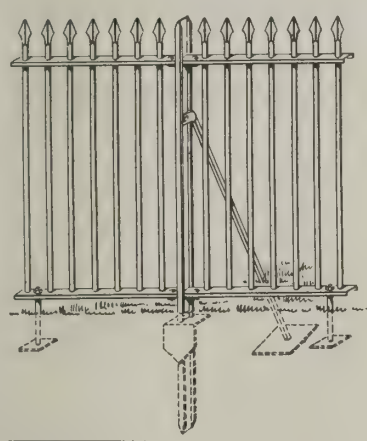

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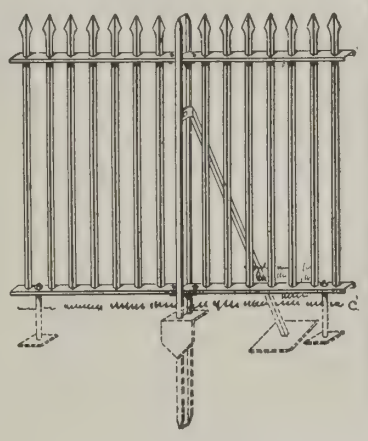

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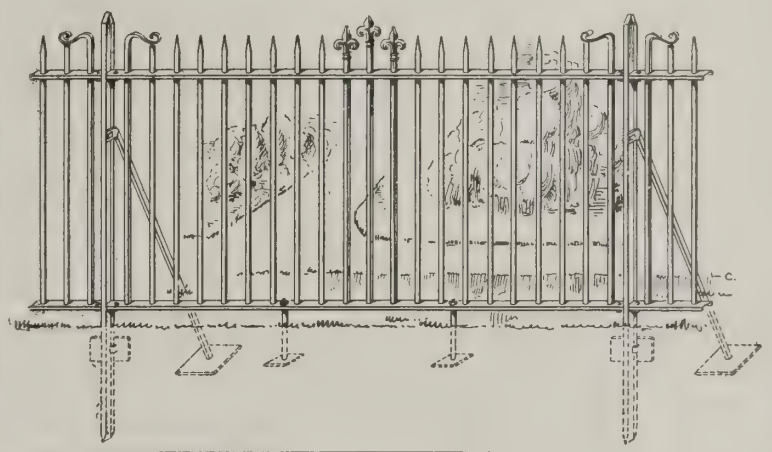

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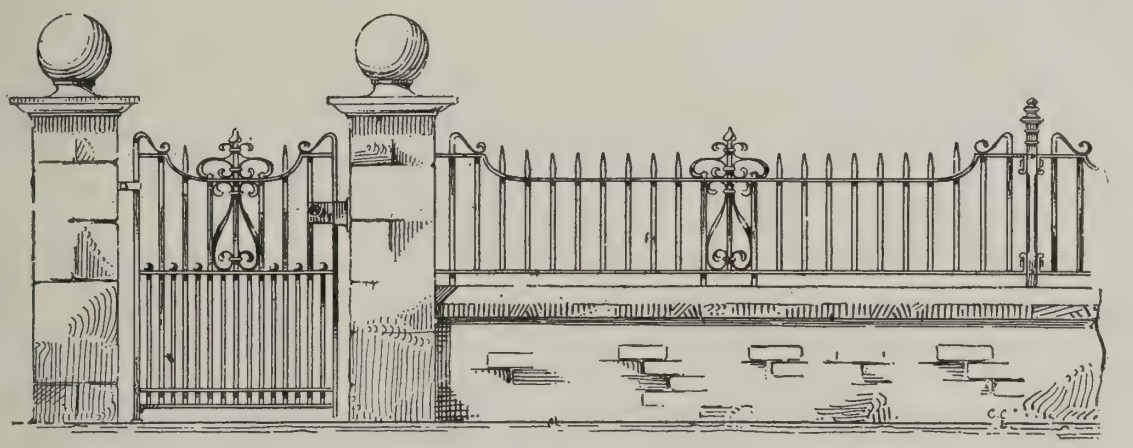

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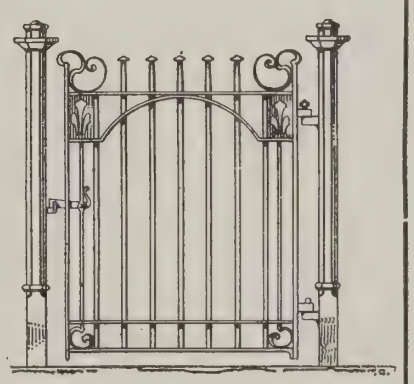

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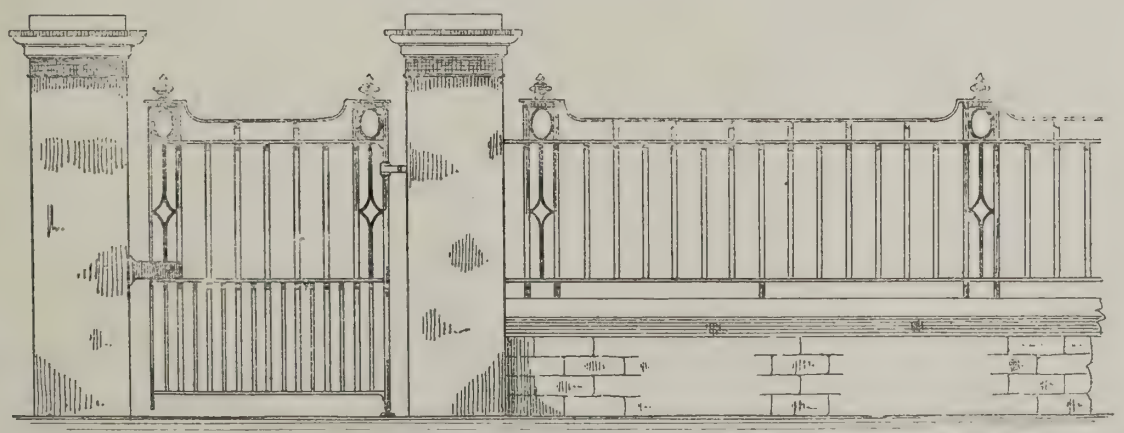

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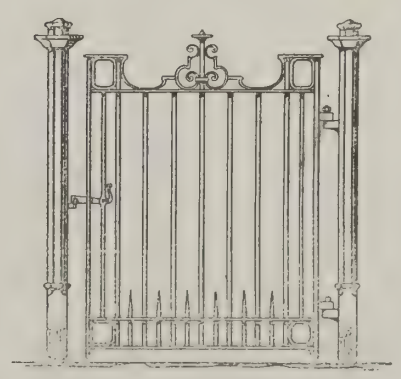

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OBJECTS.

The objects of the Association are to collect and disseminate information, to educate public opinion, to assist on non-party lines in influencing, promoting and improving legislation, and to take other private or public action in regard to the following matters :

a. The development of towns, villages and suburbs on Garden City lines.

b. Town, village and regional planning ; the promotion of civic surveys ; the amendment of street and building by-laws and estate regulations ; and the provision of improved marketing facilities and means of communication.

c. Civic design and the practice of the arts and sciences as applied thereto.

d. The provision of houses, small holdings and allotments by local authorities, public utility and co-operative societies, and other approved agencies.

e. The improvement of housing and hygienic conditions generally, including the better ventilation of all public buildings, and the increased provision of health and recreational facilities.

f. The promotion of village institutes, halls, museums and libraries.

g. The preservation of footpaths and commons, and, as far as possible, scenery and objects of historical interest ; the regulation of public advertising ; the provision of public view-points and outlook 'rests' ; the securing, wherever practicable, of access to mountains and river banks ; the prevention of river pollution ; and the abatement of all avoidable industrial nuisances arising from smoke, dust, and noxious effluents.

h. The utilisation wherever possible of local materials in building construction, and the encouragement of local craftsmanship

i. The advocacy of afforestation, land reclamation, and similar public improvement schemes ; and the development of Welsh industries, including the more intensive cultivation of the soil, and the improvement of the fisheries of the coasts and estuaries of Wales.

j. The betterment of the conditions of rural labour.

k. The improvement of rural education by securing due regard for the needs and ideals of country life and the establishment thereby of a strong enduring type of rural civilisation in harmony with the best social traditions of Wales.

ORGANISATION.

The Society consists of a North Wales Branch and a South Wales Branch. Each Branch has its own Council, elected by members resident in its area, and a Central Council is elected jointly by the two Branch Councils. The Central Council, in turn, elects an Executive Committee to deal with matters of detail.

Branches for Central Wales and West Wales will shortly be established.

MEMBERSHIP.

Membership of the Association is open to all persons paying a minimum Annual Subscription of 2/6. Societies and local authorities may affiliate upon payment of a minimum annual fee of 10/6. Any Society or local authority subscribing two guineas or more may appoint a representative on the Branch Council of the area in which it is situated.

Societies and members subscribing not less than 7/6 per annum are entitled to receive copies of the Association's publications.

METHODS.

In order to attain its objects the Association adopts a variety of methods of which the following are amongst the most important :—

1. Investigations into housing conditions in different areas and the preparation of reports upon suitable methods of reform.
2. The publication of literature dealing with various phases of Housing, Town-Planning, the Garden City Movement, Rural Development, etc.
3. The dissemination of information regarding social conditions, the Public Health and Housing Acts and their administration, revision of street and building by-laws, formation of housing societies, pit-head baths, rural organisation and kindred matters. An Information Bureau has been established at the Association's Office, and enquiries will be welcomed.
4. The arrangement of conferences and lectures and the provision of competent speakers.
5. Deputations to Local Authorities and Government Departments,
6. Interviews with landowners, architects, builders and others, for the purpose of urging the adoption of improved methods of estate development, etc.
7. The publication in the newspaper press of informative letters and articles upon new housing developments, methods of reform, etc.

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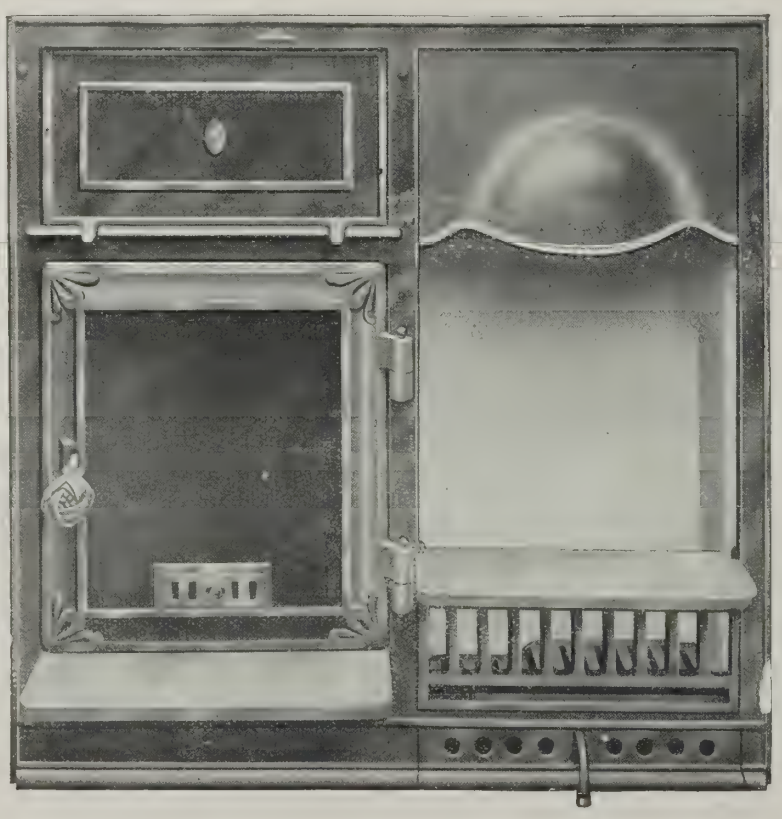

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INTRODUCTION.

In connection with the National Eisteddfod held at Neath in August, 1918, and by the kind permission of its General Committee, the Welsh Housing and Development Association was enabled, by the generosity of a few of its members, to offer a number of substantial prizes for the best designs of cottages for agricultural labourers in rural Wales. A premium of £50 was thus offered for the best design in each of the following classes or types of cottages :—

Class A.—Living Room, Scullery and three Bedrooms. (Prize given by the Right Hon. Sir Alfred Mond, Bart, M.P.).

Class B.—Living Room, Parlour, Scullery and Three Bedrooms. (Prize given by E. T. John, Esq.)

Class C.—Accommodation at the discretion of the Competitors, but with a minimum of three Bedrooms, planned entirely or mainly on one floor. (Prize given jointly by the Right Hon. Lord Boston and Sir Robert J. Thomas, Bart., M.P.)

A prize of £10, given by Lady Boston, was also offered for the best design of "Living-in Quarters" for Farm Labourers, and a second prize of £5 5s. 0d. was given by two of the Adjudicators, Mr. J. Cook Rees and Mr. D. M. Jenkins.

It was anounced, in the conditions of the competition, that the designs would be judged upon the basis of the combination of three main factors, namely, (*a*) Convenience of Planning (*b*) External Design in relation to local colour and traditions ; and (*c*) Economy of Design with regard to soundness of Construction. Among the more detailed conditions the following were also included :—

(*a*) The Cottages in Classes A and B to be broad or double-fronted, and of two stories.

(*b*) In Classes A and B a block of four houses shall be shown, of which one of the end-houses and the house next adjoining are to be planned in detail, the others in outline only.

(*c*) The design in Class C should be of a type specially suitable for Anglesey, and in harmony with the best cottage-building traditions of that county.

(*d*) In each of the three classes, Larder, Fuel Store, Earth Closet, Cupboards, etc., to be provided. Out-buildings to be provided to serve as store for Garden Produce and Tools and for Pig-stye and Fowl-house.

(*e*) All projections beyond the main building to be avoided as far as practicable.

(*f*) The minimum height of rooms to be eight feet, but a cove not exceeding one foot (vertical) may be shewn in upper storey.

(*g*) The minimum floor area of living room to be 165 feet, and of smallest Bedroom 80 feet, in each case net, clear of all projections.

(*h*) Each house to be furnished with a fixed bath. No public water supply to be assumed, and arrangements for collecting and storing rain water and the supply of hot water to be indicated.

The special conditions relating to the "Living-in Quarters" Competition were as follows :

(*a*) The building to be designed for the occupation of unmarried men, to form part of the ordinary equipment of a Welsh Farm, and to be erected in close proximity to the Farm House.

(*b*) The accommodation to consist of : Common Sitting Room, with tiled or wood block floor, good fire-place, book shelves and other fittings, and of floor area of not less than 165 feet ; four Cubicles with wood flooring, each with a separate door, opening directly into a passage, and of superficial area of not less than 90 feet ; Lockers for clothes, etc., arranged in passage or elsewhere ; washing facilities, including fixed Bath ; Coal and Wood Store in convenient position in relation to Sitting Room ; Earth Closet and Bicycle Shed outside.

(*c*) More than four Cubicles may be shown, in which case the floor area of Sitting Room must be proportionately increased.

(*d*) Head room to be not less than eight feet.

(*e*) The design to be of the simplest description, and the building to be one-storeyed.

(*f*) No public water supply to be assumed, and arrangements for collecting and storing rain water and the supply to Bath to be indicated.

The competition, which attracted a total number of 193 designs in all four classes, proved highly interesting, not merely from the utilitarian point of view, but also as representing a serious effort in the application of Art to the practical needs of the community in Wales. The Designs were adjudicated upon by Lady Boston, Prof. P. Abercrombie, M.A. (Professor of

Civic Design, University of Liverpool), Mr. D. M. Jenkins, Borough Engineer and Surveyor-Neath, Mr. J. Cook Rees, M.S.A., President of the South Wales Institute of Architects, and the Writer. All the designs were exhibited in the Art Exhibition of the Eisteddfod, and, later, a selection of about 104 were also exhibited at Llangefni, Bangor, Holyhead, Welshpool, Llanelly and Haverfordwest. The prize designs and a number of others which possess features of special interest and merit are here reproduced. There is also included a Memorandum as to the essential features to be included in rural housing schemes in Wales, drawn up by the Adjudicators (with the exception of the Writer, who was unable to act), together with Miss M. F. Rathbone (Menai Bridge), Mr. H. R. Davies (Treborth) Mr. G. A. Humphreys, F.R.I.B.A. (Llandudno) and Mr. T. Taliesin Rees, F.R.I.B.A. (Birkenhead) A model specification drafted by Mr. Humphreys, is also added.

While the Association is fully satisfied that the Memorandum and Specifications are in general harmony with its policy, and are calculated to promote the kind of housing that the Association stands for, the authors themselves, however, are solely responsible for the particular statements which the two documents contain, for the Association, as a propagandist body, would not feel competent to express opinions as to the technical and professional matters dealt with. But while disclaiming all desire to dictate in such matters, the Association hopes that this publication may prove a serviceable guide to Welsh Rural Authorities in what must be for most of them, the unaccustomed task of preparing housing schemes.

Two main objects have been aimed at throughout. First, that a high standard of excellence as regards accommodation and sanitation shall be established for all new houses, a standard below which no buildings designed for human habitation shall in the future be permitted to fall. Secondly, by the provision of elevations and perspective drawings it is sought to ensure that all cottages erected among the hills and valleys of Wales shall preserve the special features of simplicity and suitability to their surroundings, characteristic of her ancient architecture, to the exclusion of the English villa and urban type which has already gained so unfortunate a foothold in districts famous for their beautiful scenery.

It remains for me to express the grateful thanks of the Association to all who have helped in various ways to render possible this publication. In particular to the donors of the prizes, the Eisteddfod Committee, and the contributors to the special publication fund who have rendered possible the issue of this work:— Lady Howard of Llanelly, Sir Alfred Mond, Bart., M.P., Major David Davies, M.P., Mr. H. R. Davies (Treborth), Mr. John Hinds, M.P. and Mr. W. J. Neville, Chairman of the Llanelly Rural District Council ; also to the authors of the non-premiated plans for permission to exhibit them and to reproduce them in this publication.

D. LLEUFER THOMAS.

The Association also offered a prize of five guineas for the best Lay-out on Town-Planning lines, of local building area, The prize was awarded to Mr. Thomas Gibb, Architect, Aberavon, but the plan is not reproduced in this volume

A MEMORANDUM

on the Preparation of HOUSING SCHEMES for the RURAL DISTRICTS of WALES with suggestions as to Features and Provisions Essential to good Schemes.

The object of this Memorandum is to furnish the Housing Committees of Local Authorities in Wales with information upon the essential features to be included in rural Housing Schemes, in order to aid them in initiating and carrying out the same.

By providing plans and elevations of suitable designs, it is desired to assist local authorities in the choice of the same so that the requirements of Welsh rural housing conditions may be met, and the special features of the architecture of Wales may be carefully preserved and the beauty of its rural districts in no way disfigured.

The information is grouped under the following headings :—

Section A. Choice of Site.
,, B. Planning of Areas, Sites and Grouping of Houses.
,, C. Types of Houses and their detailed interior planning.
,, D. Design and Materials.
,, E. Economy in production of component parts of houses : substitution for scarce materials.
,, F. Preparation of Working Drawings.
,, G. Estimates, Quantities and Specifications.

The Memorandum does not deal with the economic questions of Government Grants, Purchase of Land, Fixing of Rents, Conditions of Tenancy, Provision for Repairs, Drawing up of Balance Sheets, etc., because it is concerned only with the actual preparation of cottage building schemes and their successful carrying out by Local Authorities.

N.B.—It is assumed that the number of houses required, and their approximate position have been determined by means of an adequate survey of existing accommodation and a forecast of reasonable requirements. If these have not yet been ascertained, the Welsh Housing and Development Association are willing to give advice on the best means of obtaining this vitally important information : application should be made to the Secretary of the Association, 38, Charles Street, Cardiff.

SECTION A.

CHOICE OF SITE.

The first step is obviously to obtain a suitable site ; the following are some of the points requiring attention :—

1. (a) **Position of Site.**—This refers to the general suitability of the site from the point of view of healthiness and amenity. The height above sea-level, not only actual, but relative to the surrounding land, is one of the most important primary factors in a good site. There is also the extremely important question as to whether a single position should be selected by a local authority, or several in different parts of the area. Reference to a thorough Housing Survey of the Needs of the district should give definite instruction on this point.

   (b) **Nature of the Soil.**—The subsoil and its suitability for foundations of the cottages. Where several sites of equal merit in other respects are available it is advisable to avoid clay.

   (c) **Existing levels and suitability for economic development.**—This must be carefully studied in relation to the price asked for the site. Irregular contours are more expensive to develop than level sites. At the same time it may be pointed out that where only steep hillsides or uneven sites are available, ingenuity of site planning* is able to effect great economies in road construction and house foundations ; and in every case where the ground is not level, the undulations of the site should affect the lay out of the roads. In many cases the most effective architectural results have been produced on difficult sites.

2. (a) **Shelter : Sun.**—In many of the wind-swept parts of Wales, shelter from storms and prevailing winds is a desirable feature of the site : investigation will show that in places artificial shelter can be obtained by judicious planting.† It is also necessary

* See "Hillside Planning." by Mr. D. M. Jenkins, in the Association's Year Book for 1918.

† See "Seaside Planting." Country Life Series.

to see that the whole site is sunny : northern slopes of hills and gloomy valleys should be avoided. It is undesirable that the surroundings should have a depressing effect, whether from artificial or natural causes.

(b) **Accessibility.**—A direct means of access and railway facilities will have a marked effect upon cost of building operations, and upon the maintenance of the property and the occupiers, but may slightly increase cost of land. Existing frontages of roads (repairable by the inhabitants at large) should be made use of wherever possible in order to reduce the cost of estate development : narrow roads should be widened. Another factor to consider is local materials and their transport to the building sites. All transport should be reduced to a minimum.

(c) **Convenience of site for purposes of Occupation.**—Previous to building operations, there is the permanent convenience of the site to be considered, from the point of view of the inhabitants of the houses. There are to be considered the distance and travelling facilities for the man to his work, for the wife to her shopping, and for the children to school.

(d) **Water Supply.**—This is a matter of fundamental importance and every attempt should be made to provide new houses with a more constant supply than rain water.

(e) **Drainage and other public services.**—It is particularly desirable that the site selected should be easily drained, and some satisfactory method of disposal of sewage and household refuse provided.

(f) **Mineral Rights.**—If the site does not include the mining rights, adequate protection against subsidence should be secured.

3. **Relation to Social life of the district.**—At the outset it is necessary to consider the social life of the inhabitants of the cottages : the connection of the housing scheme with existing village communities, both for religious, educational and recreational purposes. It would be advisable to attempt to obtain sites, if otherwise suitable, in proximity to such existing social organisation.

4. **Relation to existing Buildings.**—The effect of the new cottages upon any existing buildings cannot be neglected : it might be urged that workmen's dwellings may have a depreciatory effect upon larger property. But generally speaking, it is not the small *size* of the property but the poor *quality* of it that tends to cause depreciation : a beautiful model village with well-designed houses, gardens, and tree-planted roads, with carefully selected tenants, will raise rather than lower the standard of many a neighbourhood.

5. **Houses to be demolished and future use of the area for Housing purposes.**—It is generally understood that post-war housing schemes are to be considered as coming under Part III of the Housing of the Working Classes Act, 1890 : *i.e.* for the provision of new houses, and not to deal with displaced tenants in an improvement or reconstruction scheme under Part I or Part II of that Act. At the same time " a scheme for the erection by a local authority of houses under Part III of that Act with a view to meeting a need which will arise for new houses by the vacation of houses which are unfit for human habitation may be regarded as a housing scheme to which the principle of State financial assistance under the terms of the Circular letter should be considered applicable.*

6. **Open Spaces : Playgrounds : Allotments.**—In choosing a site attention should be given to the adequate provision of means of recreation : it is agreed that 1/10th of the area occupied by a housing scheme should be given up to permanent open spaces. And it is important to remember that a low-lying or rocky patch of ground in a site otherwise suitable for building, need not be considered a disadvantage if it can be utilised for an open space : if, however, such a patch occupied more than 1/10th of the area, the site would not be an economical one to develop. Land suitable for Allotments in addition to the gardens attached to the houses may be acquired, particularly where such land is not likely to be sold for building land and may be acquired cheap.

7. **Preservation of existing amenities.**—Care should be taken to preserve as far as possible existing trees and other features, which is possible with a skilful lay-out plan. No destruction of existing features should be allowed until the site plan is approved. It is also desirable that water courses or springs should not be defiled or degraded : it is frequently possible to make these a pleasant feature of an open space.

SECTION B.

PLANNING OF AREA, SITES, AND GROUPING OF HOUSES.

1. **Area.**—It is extremely desirable that Local Authorities in selecting sites for their housing schemes should also consider the relation of these sites to the rest of their area. It is necessary, for example, to study the nature of the adjoining property in order to

* Reply by Mr. Hayes Fisher to Question asked in the Municipal Journal," May 10th, 1918.

see that the housing scheme fits into a suitable place in the district. There is also the question of main and secondary roads, which may be required in the near future, and it would be very unfortunate if a housing scheme were to block a road improvement owing to the fact that it had not been considered in conjunction with the general development. In areas where a village, or the nucleus of one already exists, it would doubtless be advisable for Local Authorities to promote general Garden Village schemes under the Town-planning Act, while not retarding their other housing schemes for this purpose. If this is not done there is a danger of reversion to the old type of development, unrelated and overcrowded, as soon as the post-war housing schemes have been completed, and the work of providing houses is taken up by private enterprise. In this connection it will also be well to study the existing housing accommodation and particularly that which requires demolition, in order to see whether some improvements and opening out of the existing villages may be effected when the new cottages are ready for occupation.

2. **Roads.**—In studying the roads of the district it will be well to group them under the three headings of :—

(a) Arterial,
(b) Secondary,
(c) Residential.

It is probable that the housing scheme will be chiefly concerned with the latter, but it is quite possible that a secondary or arterial road may be in close proximity. "In determining the width of through or traffic roads, regard should be had not only to the traffic that will immediately fall upon them but to the traffic that is likely to be carried on them in the future. On the other hand, residential roads may be narrow in width and light in construction, provided that there is an ample distance between the buildings on either side. There is thus effected a saving in cost of construction and maintenance to the Local Authority, and it is better from the point of view both of the Local Authority and of the tenants that additional ground should be made available for gardens rather than be taken up in unnecessarily wide roads."* Roads should follow depressions rather than ridges, as thereby houses are more easily kept at a slightly higher level and drainage more economically provided. The cottages should be set back at least 20 feet from road to building line on all roads ; the space so left being thrown into front gardens. It should be noted that if any bye-laws in existence do not permit of the reduction in widths and construction for light roads, the Local Government Board is not only prepared to allow these, but, through their inspectors, definitely encourages the same, subject to bye-laws being amended to meet the altered conditions.

3. **Position.**—The question will probably arise as to whether it is advisable to place houses in rural areas in isolated positions close to farms, or whether they should be grouped in or near existing villages. Generally speaking, the latter is far preferable, provided the villages are not too far apart. Occasionally, however, where it has been found necessary to place a new school in an isolated position, this might be made the occasion for a new village grouping. The advantages of the cottages being grouped together are numerous ; both *economic* in carrying out building operations, in road making and drainage, water supply, and *social* by providing more opportunity for intercourse. The new cottages will also form excellent models, which may influence the future growth of the villages. They would also provide the opportunity for improving the existing amenities of the villages in the way of open spaces, etc.

4. **Grouping.**—There are certain economies to be effected by building blocks of cottages, but in no case should the blocks exceed six cottages. In many cases it has been found that the cost of intermediate cottages average 10 per cent. less than the end cottages. The use of semi-detached blocks has, however, the great advantage that there is no problem with regard to the back access of the cottages, this being obtained at the side of each cottage. Where a wide and metalled back-road is insisted upon for cottages in larger groups than semi-detached, it would be found that the extra cost of splitting them up into twos would be met by the omission of the passage way.

There is also the variety of effect to be obtained by means of grouping. If only one plan for the A type cottage (see Plan No. 1) were used, the blocks of 4 or 6 cottages would, of course, be substantially the same, and it has therefore been the practice in the past to introduce a great many variations of plan, and to add architectural features of different nature, in order to avoid monotony. But this is not possible where economy and speed of construction are essential, and it will be found necessary to confine the plans to at most 2 or 3 variants of each type. If these variants are then standardised for each scheme, a standard price can be obtained per cottage : variety may also be secured by means of a combination of these variants in the groups as shown in the sketches on Page No. 41. It is possible to build up groups in this way so that no monotony is obtained, and they can be made to fit into special positions such as road intersections, round greens, etc. This may be called the permutation system of grouping, and it will be found the most suitable for purposes of ease of execution and cheapness.

* See Memorandum of Scottish L.G.B.

5. **Minimum Area of Plots and Density per Acre.**—The Local Government Board has laid it down that for housing schemes to which they will contribute in rural areas, there must not be more than 8 houses to the acre, and it would be well to amplify this by laying it down that for single houses the plots should not be less than one-eighth of an acre. There would seem to be no reason in rural districts why this should not be maintained as a minimum, and space devoted to Roads and Open Spaces to be provided over and above.

6. **Disposition of Cottages and Gardens on Site.**—In every case it should be arranged that the cottages obtain a maximum of sunlight, and if the wide fronted cottage with a through-lit living room is adopted, this presents little difficulty. With regard to the best method of disposing of the garden space, it will be found advisable to attach a certain proportion of the land directly to each cottage, and to provide the remainder in the form of extra garden space or allotment at the back. By this means a man who was not interested in garden work would not have more space than he wished to cultivate attached to his cottage, and the allotment area could be divided up among the other tenants. In this arrangement the eighth of an acre minimum could be provided partly attached to the cottage, and partly in the allotment.

7. **Back Access for Groups of more than two.**—Where blocks of cottages contain more than two, the problem of back access to the centre cottages is one of considerable difficulty. It is extremely desirable that coal and manure should be easily brought to the back as well as the refuse taken away. One method frequently used in urban areas is by means of a tunnel or passage way through the centre of the block of cottages, thus giving direct access to the back yards from the front road. If this method is used in rural districts arrangements must be made for properly looking after the covered-in space. Another method is by means of a round-about pathway from the side of the end cottages. Another, if it could be arranged with the tenants, is for the tenants of the central cottages to cross between the back yard and the garden space of the end cottages. This is done in the Sheffield municipal houses, and a garden suburb near Hereford. The usual urban arrangement is a back lane by which the gardens of every house are approached directly, and though this has much to recommend it on the score of simplicity and directness, it involves the expense of a double road, and in country districts this back road may accumulate garden rubbish. It is probable, however, that in rural districts some direct back approach amounting to little more than a lane just wide enough for a cart could be provided in short lengths from a side road, and here is scope for ingenuity in the site planning. By no means should such a back lane have side walls or be heavily paved; walls exclude sun and air, while heavy paving means needless capital outlay.

8. **Disposal of Refuse and Drainage.**—It is very undesirable that rubbish should be allowed to accumulate about cottages, and this should be collected at short periods. At the same time every endeavour should be made to induce the inmates to burn as much as possible. That which is left over should be disposed of by the Local Authority in some sanitary and effective way. Such methods as a tip into a stream should not only be avoided, but made a punishable offence. Where a system of drainage has to be provided a careful scheme should be thought out for the site in order to avoid deep excavation, and also the method of allowing groups of cottages to be connected to the sewer by one main drain for each group will be found to effect considerable economy. Where water carriage is not possible, and there is no sewer, the waste from bath, scullery and wash-house should be taken at least 100 yards away from the house into a soak-away or sump hole.

9. **Fencing, etc.**—It is very desirable to avoid expensive forms of walling for boundaries. The most satisfactory arrangement is a fence or paling, which is not intended to last more than about five years, with a hedge planted behind it so that as the paling begins to decay the hedge takes its place. In selecting what to plant for a hedge it should be borne in mind that privet is exceedingly greedy, and by no means so satisfactory as quick thorn, hornbeam or beech.

These cottages being in country districts, should have all finishings, such as gates, etc., as simply designed as possible, so as to be in keeping with their rural surroundings.

10. **Planting.**—Judicious tree planting will add much to the amenities of a scheme. It is not necessary for every road, particularly the narrower ones, to be tree-planted, but groups may be introduced where the cottages are set back; all the wide roads, where the climate and soil are suitable, should have rows or double rows of trees. Grass margins should not be used in the roads unless they can be at least 8ft. wide. Trees and shrubs may also be used for screening back gardens, out-buildings and drying grounds.

In many estates fruit trees have been planted, forming continuous rows at the lower ends of the gardens.

SECTION C.

TYPES OF HOUSES AND THEIR INTERNAL PLANNING

The President of the Local Government Board has advised that local Housing Authorities should consult local women as to what kind of houses should be built and what kind of lay-out is wanted to enable the Housing Committee to meet the desires of the working class in the neighbourhood. It is highly desirable, therefore, when any cottage plans are submitted, to invite at least two women (one being the wife of an agricultural or other worker, who has studied the question and can express herself clearly upon it) to confer with the Committee upon the working part of the cottage, and the position of cupboards, shelves and other fixtures.

In the accompanying Appendix will be found plans of houses of different types suitable for erection in the rural parts of Wales. The first group are the prize designs, which were submitted at the National Eisteddfod at Neath in 1918. The other plans show alternative arrangements, and have been carefully selected chiefly from among those sent in for competition at Neath, and as to the remaining few, from among the plans published by the Board of Agriculture and Fisheries in 1915.* It will be noted that all the plans conform to a general standard of requirements in essential features.

They may be grouped into the following types :

1. Type A. Living Room, large Scullery and 3 Bedroom Cottage.
2. ,, B. Parlour, Living Room, Scullery and 3 Bedroom Cottage.
3. ,, C. Variation of A or B planned entirely or mainly on one floor.
4. It is recommended in rural areas that what is commonly known as the "wide-fronted" cottage should be used in every case. These plans generally permit of a through-lit living room, which has the great advantage of receiving direct sunlight whichever way the front of the cottage faces, and allows a mother while at work to keep an eye on the children playing at the back. The "narrow-fronted" cottage, in which the scullery, etc., is placed behind the Living Room may have advantages in urban areas, where every yard of road frontage has to be studied, and where a south aspect can be obtained ; but there is no reason for its use in rural areas, where single cottages or groups will either face on existing roads, or, if requiring new roads as approaches, will have the latter so lightly constructed as to be no more expensive than side roads in country places.

   The great advantages of through ventilation, and convenience of planning of the wide fronted cottage are obvious.

5. Minimum requirements as to sizes :

   (*a*) Living Room 165 sq. ft. of floor space clear of all projections.
   (*b*) Scullery in A type 80 sq. ft.
   B type 65 sq. ft.
   (*c*) Bedrooms 1. 144 sq.ft. of floor space
   2. 100 ,, ,, ,,
   3. 80 ,, ,, ,,
   (*d*) Heights : 8ft. is the normal height recommended. With regard to Bedrooms, these may be partly in the roof, but two-thirds of the ceilings must be of the maximum height, and in no case must the vertical walls be less than 6ft. high.

6. The following detailed features of planning, which are to be found in the designs herewith reproduced, are abstracted in order that special attention may be drawn to their essential nature.

   (*a*) Larder. This for the country should be ample in size (minimum) 18 square feet. Should not open out of Living Room, should not be placed near a flue or range, should have a window opening on the outer air, should have as sunless an aspect as possible, the S. and W. being the worst.

   (*b*) Bathroom. A separate bathroom is necessary for all future planning, either opening off a lobby as in plan No, 1, or entered from the scullery as in plan No. 2. The bath should be fixed and not made to tip up. Where there is a constant water supply, it should have a hot tap supplied from the kitchen range ; if this is not possible there should be a pipe from the copper. In any case there should be a cold tap.

   (*c*) Coal Store. This should be placed with its door to the outer air, but so that it may be reached under cover ; it should not be placed under the stair or with door opening only into scullery. The distance which the coal has to be carried from the road to the coal place should be kept as short as possible. It should accommodate at least one ton of coal.

   (*d*) Stairs. Avoid "winders." The cottage should be so designed that it will not be necessary to pass through the living room to obtain access to the staircase. Such access should be obtained from the lobby, and it is also an advantage to obtain direct access to the scullery and garden from the lobby. The stairs should not be steeper than 7-inch and 9-inch treads. A hand rail which can be gripped should be provided. The stair should not be less than 3 feet clear in width and the arris of any right-angle turn should be

* Report of the Committee appointed by the President of the Board of Agriculture and Fisheries, to consider and advise the Board on Plans, Models and Methods of Construction for Rural Cottages and Outbuildings, Reprinted 1918. Price 2/- net.

well rounded or splayed, so as to facilitate furniture being taken up or down. The staircase should be lighted and ventilated at or near the top by means of an opening window or roof light.

(*e*) Fireplaces. Not more than one bedroom should be without fireplace, and the room which has no fireplace should have a ventilator independent of window of 60 sq. ins. near ceiling.

(*f*) No E.C. to be under main body of building, but access from house should be under cover. Types of E.C. recommended, Dr. Poore's or Moule's.

(*g*) Rainwater storage. This is most important in country districts. It is recommended that a tank be provided above the coal house. (See plan No. 1) or in some similar position, in order that there may be a head of water to the sink.

(*h*) Hot water. Where ample supply is available, there should invariably be a tap of hot water to the Scullery Sink and Bath. This can be arranged without any cylinder, but with a good sized boiler behind the kitchen fire and a "water-waste preventer" in the scullery.

Where a sufficient supply is not available, the water for the bath had better be heated in the washing boiler.

(*i*) A washing boiler should be provided in every case, and the scullery should be large enough to allow space for the weekly wash.

(*j*) Cupboards and fitments. Owing to the shortage of timber and the high price in the future of separate pieces of furniture, it is advisable to include as many cupboards as possible in the contract for the house. Cupboards on one side of the kitchen range (see plan No, 1) for china and dry groceries, with drawers beneath cupboard, would probably take the place of a kitchen dresser.

In the Scullery, in addition to the drainer, (which must be of hard wood) there should be shelving, plate rack, towel rail and flap table.

In the Bedrooms, if wooden doors cannot be provided in the space left by the chimney breast, at least a rail and pegs with a wooden top, for hanging, should be given.

There should also be a separate cupboard upstairs for household linen.

(*k*) General. Fireplaces on internal walls are preferable to those on outer walls owing to greater conservation of heat.

There should be sufficient space over range for working purposes.

Taps should be high enough to put large can under. Sinks should be shallow for use with a bowl. Fixed curb should be provided in kitchen in front of range. Pulley clothes rack should be provided in kitchen or scullery. Provide drying rail above kitchen fireplace.

8. **Combined Domestic Services.**—It is worth very serious consideration whether, in cases where groups of at least 12 cottages are contemplated, some forms of co-operation should not be introduced in the new cottages. A common wash-house, which could be used by different tenants on different days of the week, would provide much more ample space than the separate scullery. Again, the common heating of hot water for a group of cottages, which might be arranged in conjunction with a common wash-house, would effect many economies, utilising waste heat from the washing. One tenant, in consideration of reduced rent, might undertake to look after the apparatus.

There are other directions in which co-operative house-keeping might be attempted, and local authorities would do well to consider this aspect of the subject very carefully.

SECTION D.

DESIGN AND MATERIALS.

The necessity for strict economy will, of course, prevent the use of ornamental features and expensive materials, and great care will have to be exercised in order that extreme simplicity may not degenerate into baldness.

1. **Type.**—The most suitable type of design to be adopted will vary according to the locality, in regard to materials and to the actual site in regard to form. For example, a flat site in a brick district suggests a different treatment to a valley in a stone country. In the accompanying illustrations many elevational treatments are suggested which may be found helpful.

2. **Grouping.**—Good proportions, grouping and careful consideration of the colour effects to be obtained from available materials are the most effective means at the architect's disposal for producing a pleasing effect by simple inexpensive means. It will be remembered that the depressing effect of the ordinary rows of houses is largely due to the long unbroken terraces, the only relief to which is afforded by meretricious "ornament." A reference to the suggestions for site grouping (see B4) will explain

how this dreary treatment may be avoided. The road frontages should be considered as a whole, and an endeavour made by recessing certain blocks and breaking others forward to produce a pleasing but restful composition. The artistic success of the scheme will not depend so much upon the design of each single cottage (although each unit with its windows, door, etc., should be carefully designed) as upon the way in which the cottages are grouped and disposed on the site.

3. **Roofs.**—These are the chief means of grouping as suggested above ; the breaks thus produced would be few, but effective. All unnecessary breaks and gables should be avoided on the score of outlay and up-keep. Nor are ornamental ridges, finials and bargeboards suitable for modern cottages.

4. **Windows and Doors.**—One of the faults of the depressing rows of houses, already alluded to, was the poor design of doors and windows. Both these should be well proportioned and of simple, solid design, and care taken in their spacing ; if this is done there will be no need to add cheap and tawdry pieces of mechanical ornament.

   For exposed situations the sash window divided into panes, is the most suitable, and it can be made to harmonise with the proportions of a small cottage. A deep bottom fillet, allowing ventilation at the middle rail should be provided for ventilation purposes, as shown in the accompanying detail on Page No. 41.

5. **Local Materials.**—The use of local materials will generally ensure a satisfactory colour effect as well as saving transport. It should be quite unnecessary to import bricks into a stone district, and slates are the natural Welsh roofing material.

   Where a porous stone is used for the walls, it should be plastered externally with a cement plaster, suitably coloured, regard being given to the colour of roofing and chimney material, etc., and to the general setting of the houses.

6. (*a*) **Floors.**—Living Room and Scullery tiled. If a wood floor is used on the ground floor, it should be laid solid on concrete. There should be a patch of concrete or asphalt outside the back door of a minimum area of 70 sq. ft. properly sloped for drainage.

   Ground Floor. Level at least 9ins. above ground level.

   (*b*) **Damp Course.**—Never less than 6ins. above highest level of ground.

   (*c*) **Partitions.**—2½ slab partitions specially designed to be sound-proof.

SECTION E.

ECONOMY IN PRODUCTION OF COMPONENT PARTS
AND SUBSTITUTION FOR SCARCE MATERIALS.

The Report of the Committee appointed by the Local Government Board to consider Questions of Building Construction in connection with the provision of Dwellings for the Working Classes in England and Wales, and Scotland, and report upon methods of securing Economy and Despatch in the provision of such Dwellings, has been published (Cd. 9191, price 1/-) and contains a great deal of valuable information for local authorities.

The following points may be noted :—

1. The Standardisation of single features of the buildings, so that each small group of cottages will not have these specially made and designed, will result in the saving of considerable cost. If this provision of standardised features is undertaken by the Government, local authorities will only have to see that their designs can incorporate them. But it is quite possible to use the same principle of standardisation on a smaller scale ; several local authorities might combine to have their plans prepared jointly so that their orders for windows, doors, etc., could be placed together with wholesale carpentry firms.

   The following is a list of articles suitable for standardisation :—

   (*a*) Concrete window-sills, mullions and lintels, door steps, kitchen jambs and lintels, concrete slabs for partitions, reinforced concrete, including floor joists, ceiling joists, roof rafters, and purlins, stairs and manhole covers, etc.

   (*b*) Doors, windows, picture rails, skirting boards, facings, stairs, shelving, hinges, locks and general ironmongery.

   (*c*) Baths, sinks, E.C.'s, W.C.'s, flush cisterns, washing boilers, water taps, etc.

   (*d*) Fireclay goods, including sinks, drain pipes, M.H. inverts, inspection eyes, bands, traps, off-sets, etc.

   (*e*) Grates, ranges, stoves, and general cast-iron work.

2. The substitution of Concrete for brickwork or stone walling, where suitable aggregate is found in the locality, may be advisable, particularly if skilled labour is not available.

3. The scarcity of Timber may suggest possible substitutes : e.g. concrete lintels cast on the site. Advantages : fireproof and permanent.

SECTION F.

PREPARATION OF DESIGNS AND WORKING DRAWINGS.

The housing to be undertaken after the war should embody the latest ideas of planning and accommodation, and the best advice should be obtained in order that the schemes may form standards for the future.

1. Where no qualified architect or surveyor possessing experience in architectural work is in the service of the local authority, it will be advisable to call in an outside architect, to prepare a scheme at the outset.

2. Small authorities whose interests are similar would do well to co-operate in forming a joint Housing Committee : by this means many administrative economies may be effected. A single architect could be appointed for the group of authorities, or the work divided among several who would confer during the preparation of the scheme. A joint office for the local authorities could be arranged where meetings could take place and the drawings be kept. It would also be convenient that supervision by the Clerk of Works should be organised for the isolated groups of cottages from a central office.

3. There will necessarily be co-operation between the outside architect (where such is called in) and the surveyor to the local authority or group of authorities in order that the Surveyor's local knowledge, experience and office facilities may be fully utilised. This will take different forms. The Surveyor's services will be required, for example, in : –

   i. The arranging for all local services, e.g., drainage, water, etc.

   ii. The planning and construction of roads.

   iii. Supplying information as to local materials and labour, and as to housing conditions and requirements.

   iv. Continuous supervision of building operations by means of Clerks of Works.

   The Architect at the same time being responsible for the design and working drawings of the houses, general architectural supervision during erection, squaring up at the conclusion, etc.

   As to the lay-out of the site, no general rule can be suggested. In some cases it will be undertaken by the Surveyor, in others by the Architect.

4. It is worth pointing out that the plans here reproduced are not to be looked upon as examples for exact repetition; they are given as guides to accommodation and arrangement and should be modified to suit local requirements and particular positions. At the same time it is important that no lowering of either standard of size or arrangement should be introduced during the process of adaptation, or in the preparation of new designs.

SECTION G.

ESTIMATES. QUANTITIES AND SPECIFICATION.

1. **Estimates.**—It is impossible at this stage to forecast the prices that will obtain immediately after the war : much depends upon Government action with regard to labour and materials. It is advisable to take an accurate cubical measurement of the contents of cottages, and estimate the cost in terms of pre-war prices. It will probably be necessary to add at least 60 to 70 per cent. for the post-war cost of building.

2. **Quantities.**—With carefully figured working drawings and a specification, it is not necessary to have quantities taken for building work of this nature ; indeed, it has generally been found that a bill of quantities causes confusion in a country builder's mind and increases an estimate for cottage building.

3. **Specification.**—The following outline Specification has been put forward as a model for use in housing schemes. It embodies the reasonable requirements of bye-laws for rural districts.

MODEL SPECIFICATION

Prepared by Mr. G. A. HUMPHREYS, F. R. I. B. A.

SPECIFICATION OF WORKS to be done and Materials to be employed in the erection and completion of.....
Cottages at.....
for.....in accordance with drawings number.....
and such other detail drawings as shall be supplied by.....
of....., Architect,
under whose superintendence and to whose satisfaction the works are to be carried out and completed.....191

PRELIMINARY AND GENERAL.

Generally.—This Specification, with the drawings herein referred to, forms part of the Contract between the Employers and the Contractor. The Form of Contract to be that known as the R.I.B.A. Form.

Works.—The whole of the works to be carried out in a good and workmanlike manner to the full intent and meaning of the Drawings and Specification, under the direction and to the satisfaction of the Architect. The Contractor to provide and fix all materials as specified, except where the words "provide only" or "fix only" are used.

Water.—Provide clean water for the use of the works, and pay fees, if any.

Samples.—The Contractor is to submit samples of any materials the Architect may desire for his approval.

Notices.—Give all Notices required to Local Authorities, and pay fees, if any.

Tools, etc.—Provide all scaffolding, tools and everything necessary for completing the work.

Set Out Works.—The Contractor must correctly set out the works, and be responsible for and make good any error that may occur in so doing.

Competent Labour.—All work to be done by competent men.

Protection.—Cover up and protect all work whensoever needed. No work liable to injury to be carried out during frosty weather. The Contractor will be held responsible for any damage to adjoining property.

Making Good.—Do all necessary cutting for and attendance on trades, and make good damage and leave all perfect on completion.

Cement.—The whole of the cement used to be best Portland, to comply with the revised British Standard Specification.

Sweep and Scrub.—Sweep out all rooms, scrub all floors, and clean all windows on both sides, clean out all gutters, and deliver up the building and premises in a clean and perfect condition on completion.

Insurance.—Insure the buildings as soon as any timber is fixed, for the full amount of the Contract in an approved Assurance Company. Such insurance to be kept in force by the Contractor until the building is handed over. The policy shall be taken out in the joint names of the Contractor and Employers, and be deposited with the Architect.

The Contractor to insure his men and be responsible under the various Acts of Parliament, and satisfy all claims for compensation against injury.

Provisions.—All p.c. amounts stand for the nett price at works, and the Contractor to include for carriage, profit and fixing, and allow for return of empties ; any amount not ordered to be expended will be deducted in full.

Rubbish.—Deposit on site where directed all rubbish as it accumulates, and on completion remove all surplus.

Task Work.—Before sub-letting any work as task or piece-work the written approval of the Architect must be obtained.

Maintenance.—The Contractor shall maintain the works for six months after completion, and any defects arising during this period he will be called upon to make good at his own expense, and to the Architect's satisfaction.

EXCAVATOR AND DRAINER.

Surface Soil.—Excavate to a depth of seven inches over the site of the several buildings and wheel and deposit where directed.

Digging.—Excavate to a good foundation as the Architect may approve for the several walls, chimney breasts, etc., and do all other necessary excavation ; fill in and ram where required and wheel and deposit where directed all surplus earth, or use in filling up as required. Well ram and consolidate the ground under all floors.

Dry Ballast Filling.—Where the subsoil is not of a dry and is of a porous material lay a four inch thick bed of approved hard dry ballast filling well rammed under concrete of solid floors of living rooms and scullery and parlour, if any. An outlet should be provided at the base of this filling to prevent the accumulation of water. (Note.—The ballast is not required under ordinary joist and boarded floors.)

Drain Gulley.—Provide and fix where shown, on concrete foundation, approved channel gulley trap, nine inches internal diameter, to receive sink waste, with C.I. grid, four inch outlet. Waste to discharge at end of channel furthest from trap.

Drain.—Lay feet lineal of four inch socketted drain pipe, jointed in cement, averaging depth.

CONCRETOR.

Concrete.—The concrete to be composed of one part by measure of Portland cement, six parts of ballast composed of slag, hard bricks, stone, or other approved material broken to varying sizes, but all to pass a two inch ring and sufficient sand as to fill all voids. The materials to be gauged, deposited on a stage, well mixed in small quantities by turning over both dry and with a due proportion of water, and at once deposited into the trenches or otherwise to the required thickness, and well consolidated until the matrix is flush with the surface.

Footings.—Lay a bed of concrete under all walls ; to be nine inches thick and two feet wide under eleven inch or nine inch walls, and six inches wider than the footings of piers, etc.

Floors.—Lay a six inch bed of concrete over the whole surface of the building properly levelled and prepared to receive tile or other floors. All other hard floors to be finished to the required thickness of six inches with a ¾in. thickness of cement and sand, limestone or granite chippings (two and one) to which five per cent. Pudlo has been added, and brought to a hard smooth surface.

Form concrete hearth five inches thick to fireplaces on first floor, and finish with ¾in. top coat as to ground floor.

Lintels.—Over all openings in external walls, except where directly under eaves, put lintels composed of four parts of approved gravel, two parts of sand and one part of cement, reinforced with ½in. diameter steel rods ; the lintels to be the full thickness of the walls carried, and to be one inch in depth for every foot or part of a foot of opening and none to be less than six inches deep, and to have a bearing of six inches at each end. One steel rod to be put in for every half brick in thickness of the wall carried.

Rain Water Butts.—Provide concrete base and bearers for Rain Water Butts, and slope to throw wet away from building and provide outlet for overthrow water to field drain or soak-away pit.

BRICKLAYER AND WALLER.

Bricks.—The whole of the bricks used, unless otherwise specified, are to be good hard-burnt common bricks square and true and approved by the Architect. For faced works to be picked.

Stone Walling.—To be rubble masonry in mortar with stones from approved quarry, one through bond stone to every superficial yard ; stones to be laid on quarry bed and grouted and flushed with mortar.

Mortar—The mortar to be composed of well burnt stone-lime from an approved kiln, and clean sharp river or pit sand in the proportion of one of lime before slaking to three of sand (by measure), and mixed fresh for use (N.B.—Proportion to be one to two if measured after slaking.)

Cement Mortar.—The cement mortar to be composed of three parts (by measure) of clean sharp sand to one part of cement, to be mixed fresh and used immediately.

Nature of Work.—The whole of the walls, chimneys, etc., to be built of the forms, thicknesses and dimensions shown upon the several drawings. All walls to be carried up together all round, no wall rising more than five feet above the level of the adjacent wall. Hollow walls to have two approved galvanised iron strong ties per yard super. Bitumen sheet damp coursing to be laid over all window and door heads the full width of external wall and cavity and turned up three inches at internal wall. Build all half-brick walls, sleeper walls and piers where shown, form all openings, flues, splays and reveals.

Bedding Timber.—Build in, bed and point in mortar all exterior door and window frames, all sleepers, bond timbers, key pieces, wall plates, lintels, templates, wood joint slips, beams and any other timber so requiring, and back up with solid work all timber, stone work, iron work and other matters set in the brickwork, and set all stones.

Partitions.—The partition to bedrooms, etc., unless otherwise shewn, to be approved concrete slab partitions two inches thick.

Joints.—All joints of brickwork to be well filled in, flushed and neatly weather-struck where exposed, to be left rough or well raked out where roughcasted.

Footings.—The whole of the walls to have footings twice the width of the several walls and to be in offsets of not more than 2¼ inches on each side. The footings to be stepped up where the levels vary. (See Clause 2 of Excavator for adjustment as to depth). If on concrete no footings required.

Dampcourse.—Lay on all walls, chimney breasts, etc., dampcourse of two courses of slates breaking joint in cement mortar, or of approved bitumen, dampcourse to be the full thickness of brickwork and four inch laps.

Arches.—Turn two ring rough cambered arches over fireplace openings where required, the opening in living rooms to have 2 x ½in. wrought iron cambered arch bar, crooked at ends, or concrete lintels as described in Clause 4 of Concretor may be used in place of arches and bars.

Flues.—Form all chimney flues, which are in no case to be straight, to the sizes shown on drawings, with as easy bends as possible, and properly gather, turn, parge and core the same as the work proceeds and provide all necessary ironwork and gather the flues immediately over the fireplace openings. No timber or plugs to be inserted within 4½ inches of any flue. Flues to be not less than 9 x 9 inches.

Corbelling.—Do any necessary corbelling to chimney breasts and stacks. Build strong corbels where necessary to support the ends of purlins, ceiling beams, etc.

Chimney Stacks.—Build the chimney stacks where shewn in selected bricks in cement mortar and finish tops with projecting courses of brickwork as shown. Insert on top of each flue approved chimneypot p.c. each set and flaunched, in cement mortar.

Air Bricks.—Provide and fix in each cottage 9 x 6 inch selected air bricks, two in larder, one in E.C. or W.C., and at least two under each joisted floor (if any) on the ground floor, so arranged as to ensure cross-ventilation, if necessary by means of a six inch drain pipe under the scullery floor ; and one 12 x 9 inch in all bedrooms without fireplaces placed immediately below the ceiling.

Tile Drips.—In cases where roughcast is not used provide and build in where shown two courses of approved red roof tiles, one with a continuous nib to form drips over windows, doors, etc., to project 2½ inches and protect the same from injury.

Washing Boiler.—Provide and fix in each scullery or wash-house, as shown, a 10-gallon rustless iron pan with cast iron door and frame, etc., complete, and line where necessary in firebricks ; the tops to be finished with 1½in. thickness of cement and sand, three to one, rounded on front edge, and the outside to be built in selected bricks and pointed. Connect to flue an approved outlet to conduct the steam from copper.

Sinks.—Provide an approved cane in and out glazed stone-ware sink in each scullery not less than 24 x 18 x 6 inches deep, fixed on tee-iron cantilevers built into wall.

Limewhite.—Strike the joints and limewhite two coats the interior walls of scullery, larder, coals and E.C. or W.C.

Floors.—Pave the floors as shown on plans with 6in. approved red quarries bedded and pointed in cement mortar, cleaned off at completion and covered with sawdust.

Threshold and Steps.—Fix approved stone, concrete or brick on edge in cement steps to outer doors.

Benches.—Bench to larder to be 2½in. natural or patent stone or slate jointed in cement on selected brick piers.

Beamfilling.—Do all necessary beamfilling and raking, cutting, attend upon, cut for, and make good after other trades, and do everything required to complete the works to the satisfaction of the Architect.

Fireplaces and Ranges.

Stoves.—Allow the p.c. sums of £ for each living-room range, £ for each scullery range, and for each bedroom fireplace, to be selected by the Architect.

Set Grates, etc.—Allow for fixing all stoves, range and mantel pieces, make good all round after fixing, bed solid and face with firebrick all flues exposed to flame.

TILER.

Tiling.—Cover the whole of the roof with hard-burnt red tiles of an approved make, in approximately equal proportions of light-red, dark-red, dark-brown and bluish to give a brindled effect, either hung with two nibs to each tile or nailed with two stout composition nails to each tile. The tiles to be laid to 3in. lap on and including 1¼ x 1in. red fir laths securely nailed with wrought nails to each spar and torched up with lime and hair mortar ; roofs of dormers, if any, to be tiled to match. Perform all cuttings and labours. The three courses next all eaves, hips, gables and ridges to be nailed with two stout compo. nails to each tile if nibtiles are used.

Special Tiles.—Provide all necessary special tiles for double eaves courses, tile and a half to gables, and where required and hip and valley tiles, all these tiles to match the roofing tiles.

Ridge.—Cover the ridges with plain half-round red ridge tiles of the same make as roofing tiles and bed and point in cement mortar. Gable ends of ridges to be made to tilt slightly.

Verges to project over walls with one course of tiles laid flat fixed as verge nailed to rafter.

Soakers.—Fix all lead soakers or other under flashing ; provided for under "Plumber."

Generally.—Point all tiles to gables or otherwise where necessary in cement mortar. Make good after all trades and leave perfect and watertight.

Alternative for Pantile Roofs.

Tiles.—The tiles to be good hard-burnt pantiles from an approved kiln with strong nibs and good collars.

Laths.—The laths to be 1½ x 1in. sawn fir, free from sap, and well nailed to rafters.

Lap.—Tiles to be lain to 3in. lap, put three plasterer's laths up each row of tiles and bed tiles on same in hair mortar.

Hips and Ridge.—Provide and fix half-round hip and ridge tiles bedded in mortar and pointed in cement.

Cutting.—Do all necessary cutting to hips, ridges, valleys, and round chimneys. Put in feather-edged weather fillet in cement and pointing elsewhere and leave all perfect at completion.

SLATER.

Alternative for Slate Roof.

Slates.—The slates to be 16 x 8in. or other approved size, best thirds slates from an approved quarry, free from shakes and other effects.

Slating.—Cover the whole of the roof with the above-mentioned slates laid to a lap of not less than 3in. throughout on and including 1¼ x 1in. sawn fir battens securely nailed to rafters. Each slate to be securely fixed with two stout compo nails.

Trim and Point.—Trim and point verges in cement and fix extra course of slates laid flat under verges.

Cutting.—Do all necessary cutting to chimneys and valleys and hips.

Eaves.—Put double course of slates at eaves bedded in cement mortar.

Ridges.—Cover the ridges and hips with best quality plain blue Staffordshire ridge tiles with lapped joints bedded and pointed in cement mortar.

Soakers.—Fix all lead soakers provided by plumber.

PLASTERER.

Sand.—The sand for plastering to be clean, sharp river or pit sand, free from earthy loam or saline materials, well screened.

Lime.—The lime for coarse stuff to be well-burnt grey stone lime from an approved kiln, that for the setting coat to be approved plaster lime, free from lumps, flares or core, and to be run to putty at least one month before being used.

Cowhair.—The coarse stuff throughout to have 10lb. of good long cowhair, free from grease or other impurities, well beaten and mixed with every cube yard of coarse stuff.

Laths.—The laths to be sawn Baltic red deal or other approved laths and of good single lath strength, each lath to be properly secured with 1in. galvanised nails to each spar, but jointed, to break joint every three feet.

Cement.—The cement is to be the best Portland as specified in "Preliminary and General."

Proportions.—One part by measure of lime to be well mixed with three parts of sand for coarse stuff, one part of lime putty to one part of clean sand for setting coat.

Lath and Plaster.—Lath and two coats plaster the whole of the ceilings, and studded partitions, including soffits of stairs where necessary (N.B.—Where possible specify expanded metal in preference to wood laths.)

Walls.—Plaster, float and set the whole of the interior walls, except sculleries, larders, coals, E.C. or W.C. and out-buildings, the plaster to be continued to floor level in all cases.

(N.B.—In the long run it will be found more satisfactory to render walls with Portland cement and finish with Parian cement or gauged plaster.)

Partitions.—Point in plaster the joints of slab partitions and give one skimming coat. (See "Bricklayer and Waller.")

Angles.—All external angles to have a first coat of cement and to be slightly rounded.

Roughcast.—The external walls, where shown roughcast are to have thickness of cement (three to one) in two coats, the second coat left rough, and dashed while wet with approved fine shingle mixed with pure cement and thrown on.

Run hollow weathering 5in. girth with cement fillet over heads of external openings as shown.

Make Good.—Make good after all trades and leave perfect on completion.

CARPENTER AND JOINER.

Generally.—All prices to include for nails, screws, and everything necessary, including fixing. All joinery to be executed in a good workmanlike manner.

Finished Sizes.—All joiners' work must finish the full size specified unless specially stated to be out of standard size, in which case an allowance not exceeding one-eighth of an inch will be made for planing.

Doors, etc., framed.—All doors and other joiners' work are to be framed together immediately on the work being commenced, but not to be glued or wedged up until ready for fixing.

Stack Boards.—All floor boards to be stacked as soon as the work is commenced, and put under cover at least one month before being laid.

Jointings.—All external joiners' work to be jointed with a mixture of red and white lead mixed with boiling linseed oil.

Framing.—All framing must be put together with mortice and tenon joints wedged solid.

Spacing.—No two joists, rafters, or partition studs to exceed 14in. apart, and each joist to have at least 4½in. bearing at each end.

Timbers and Deals.—All timber used, unless otherwise specified, is to be of good quality Baltic red deal, to be cut square, well seasoned and free from sap wood, large or dead knots, shakes or other defects.

Oak.—The Oak is to be English or Dantzic, free from sap wood, dead knots or other defects and well seasoned and dry.

Joiners' Timbers.—The whole of the Timber for joinery, excepting as may be otherwise specified, is to be of good quality, red deal, to be cut free from sap wood, shakes and other defects, and to be thoroughly well seasoned and dry.

Note.—White deal of equal quality may be used for internal doors and casings, cupboards, stairs, picture rails and trap doors.

Floor Joists.—Construct the floors of the bedrooms and landings with joists of the scantlings shown on drawings, properly trimmed, the trimmers and trimming joists being ½in. thicker than the other joists when three are trimmed, and 1in. thicker when more than three are trimmed.

Provide necessary fillets for concrete hearths.

Cross Bridging.—Put one row of 1½ x 1½in. sawn herring-bone strutting to all bedroom floors over 8 feet bearings.

Floors.—Lay the above floors with 5 x ¾in. (ploughed and tongued) best quality of "Petersburg" white deal floor boards thoroughly seasoned, well cramped, jointed, and securely bradded down at each joist with two 2in. brads, punched down and well cleaned off and kept covered with sawdust. Put neat mitred margins to all hearths.

Roofs.—Construct the whole of the roofs in the best and most workmanlike manner, with timbers as shown on drawings. The rafters are to be notched and spiked to wall plates and spiked to purlins and ridge. The ceiling joists to be spiked to rafters, purlins, and to ceiling beams.

Fascia.—Provide and fix 7 x ⅞in. wrought fascia board spiked to rafter feet, to serve as tilt for tiles or slates ; fix rafter to verges in lien of verge board and fix on suitable bearers ⅞in. soffit boards to eaves.

Gable Framing.—Fill in the gables and over dormers (if any) with 3 x 2in. studs (for weather boards).

Weather Boarding.—Cover the gables where shown with 1in. elm weather boarding in 7in. widths laid horizontally with 1½in. lap and spiked to framing with galvanised nails. Provide tilting fillet at base and 1½ x 1in. fillet nailed to frame to cover joint at angle (if any).

Stud Partitions.—Form any stud partitions shown on bedroom plans with 3 x 2in. sills and studs, the heads of studs to be spiked to ceiling joists or rafters and the door heads to be framed with 3 x 2in. stuff, and include two rows of 1½in. nogging pieces cut in between the studs.

Lintels.—Put sawn lintels to all door and window openings, and, where required, except where otherwise specified, to be 1in. in depth for every foot or part of a foot the opening is in width, and to have a 6in. bearing at each end where possible, and no lintel to be less than 3in. deep.

Wood-fixing Slips.—Provide all necessary deal joint slips to be built in dry in joints, or coke breeze bricks, for fixing joinery.

Stairs.—Construct the stairs with 1⅛in. clean deal treads with slightly rounded nosings and ⅞in. risers all tongued and glue blocked housed into 1⅛in. wall strings and outer strings grooved to receive the plaster ; or, alternatively 1⅛in. strings may be used with 2 x 1⅜in. fillets securely screwed to strings to carry threads and risers which must be securely nailed to them. The quarter spaces to be carried on suitable bearers, the strings ramped where necessary. Put 1⅛in. nosing to quarter space landings. The newels to be out of 4 x 3in. The balusters to be ⅞ x ⅞in. firmly secured to handrail and string. The handrail to be 3½ x 2in. moulded, housed to newels. Line well hole with ⅞in. apron linings grooved for plaster and put ⅞in. rounded nosing over same.

Architraves.—Put ¾ x 1½in. chamfered cover fillets as architraves to internal doors to stop plaster where necessary.

Skirtings.—Put 4in. x ⅞in. chamfered skirting plugged to walls.

Picture Rails.—Put 2½ x ⅞in. plain picture rail round living room and parlour (if any) securely nailed to plugs or breeze bricks every three feet. (N.B.—To save the driving of nails into walls specify picture rails in bedrooms where possible).

Outer Doors.—The outer doors to be 1⅞in. framed and braced filled in with ⅞in. matched and V-jointed boarding as shown, hung to rebated frames out of 4 x 3in. with two 4in. W.I. butts, groove frames for plaster and roughcast, or fix small fillet to break joint externally, and securely fix to walls and dowell to steps.

Provide hood to front door as shown on the drawings, if any.

Internal Doors.—Internal doors and external doors to coals and E.C. or W.C. to be ledged and braced, doors having $\frac{7}{8}$in. ledges and braces covered with $\frac{7}{8}$in. matched and V-jointed boarding, doors hung to $1\frac{1}{8}$in. linings, having $\frac{5}{8}$in. stops planted on with 18in. W.I.T. hinges, fitted with Norfolk latches, casings securely fixed to wood slips, lintels, etc., or, alternatively, $1\frac{3}{8}$in. four-panelled square framed doors with stout panels may be used.

Each front and back door to have approved rim locks and brass furniture, and 6in. black iron barred bolt, and strong japanned chain. W.C. or E.C. doors to be 3in. less in height top and bottom than the frames, for ventilation, and to have 4in. iron bolts, and thumb latch.

Trap Door.—Provide $\frac{7}{8}$in. beaded flap and frame fixed in ceiling over landing at top of stairs for access to roof. To be hinged and secured with bolt.

Windows.—Construct the windows according to details with jambs, heads and mullions out of $3\frac{1}{2}$ x $2\frac{1}{2}$in. wrought, splayed and rebated and throated with sunk weathered and throated oak sills out of $5\frac{1}{2}$ x $2\frac{1}{2}$in. rebated for window boards, and grooved for and including $1\frac{5}{8}$ x $\frac{7}{8}$in. deal fillet oak tongued. (See detail drawing).

Fill in the frames with $1\frac{5}{8}$in. wrought rebated and throated lights with $\frac{7}{8}$in. twice rebated glazing bars as shown. The casements where marked on plan to be hung at sides or top with $2\frac{1}{2}$in. wrought butts, and provide approved iron casement stays and fastenings. The middle bar and transom is in some cases to be in two parts, and rebated as shown on F.S. detail, thus permitting the top half of the light to be hinged at top to open outwards, the bottom half being fixed. Fix small moulding as weather bar to transoms. Provide approved iron stays and fasteners. Provide light frame and fly-proof gauze to larder window hung to inside of frame.

Alternative for Sash Window.—Construct the deal cased frames according to detail with $7\frac{1}{2}$ x 3in. sunk, weathered and check-throated oak sill, rebated for window board; $1\frac{1}{8}$in. pulley stiles grooved for $\frac{7}{8}$ x $\frac{3}{8}$in. parting bead and fitted with splayed and rebated pocket-piece. The inside and outside linings to be $\frac{7}{8}$in. thick grooved and fitted with strong brass axle pulleys. Fit 1in. bead lining and $\frac{1}{4}$in. parting slip, $\frac{7}{8}$ x $\frac{5}{8}$in. inside bead, bottom bead to $1\frac{3}{8}$in. deep. On outside of frame fix $\frac{3}{8}$ x $\frac{3}{4}$in. mould. Fix deal cased frames with $1\frac{3}{8}$in. wrot, rebated and moulded sashes, with $\frac{7}{8}$in. twice rebated sash-bars, as shown, and rebated meeting rails. Hang sashes with stout flax lines to C.I. weights, two to each sash. (See detail drawings.)

Window Boards.—Provide $1\frac{1}{8}$in. wrought and rounded on edge window boards rebated to oak sills and grooved for plaster; and to have returned ends where required; or, alternatively, red quarry tiles set in cement may be used.

Cupboard.—The cupboard in living room to be $1\frac{1}{8}$in. panel front, in two heights, doors 3 feet high, with space and $\frac{7}{8}$in. shelf between, with $1\frac{1}{8}$in. rounded top each with two $\frac{7}{8}$in. shelves and bearers, doors to be fitted up with knobs and turnbuckles, and where folding to have 3in. iron necked bolts. Bedroom cupboard to have doors $1\frac{1}{8}$in. panel fronts, 3in. hook rail, $\frac{7}{8}$in. shelf and $1\frac{1}{8}$in. rounded top. Provide and fix six coat hooks to each cupboard.

Cloak Rail.—Fix where directed $\frac{7}{8}$in. chamfered cloak rail 6 feet long, and fix six hat and coat hooks to same.

Shelves.—Provide and fix where directed in scullery, larder and out-buildings, 50 feet run of $\frac{7}{8}$in. shelving, average 9in. wide, on suitable bearers plugged to wall; provide and fix 30 feet of hook rail where directed; also provide and fix on proper bearers 7 x $1\frac{3}{8}$in. mantel shelf in living room.

Air Grids.—The air bricks in larder to have fly-proof perforated zinc fixed on the inside in small wood beads. The air bricks in bedroom to have small hopper casing.

E.C. Seat.—Provide and fix $1\frac{1}{8}$in. seat, with properly dished hole on 5 x $1\frac{1}{8}$in. bearers.

Provide and fix on suitable bearers $1\frac{1}{8}$in. draining board to sink, throated round edge.

Washing Boiler Lid.—Provide double-boarded copper nailed lid to washing boiler with shaped wooden handle.

R.W. Butt.—Provide approved burnt-out R.W. Butts with beer taps, overflows and lids.

Attendance.—Cut for other trades and make good after same, and give any assistance in joiners' trade required by other trades.

SMITH AND IRONFOUNDER.

Eaves Gutters.—Provide and fix to eaves of main roof 5in. half-round cast iron eaves gutter on strong W.I. brackets, built in or screwed to fascia with all necessary stopped ends angles and outlets complete.

Fall Pipes.—Provide and fix 3in. inside diameter cast iron fall pipes, with all necessary swan necks, heads, shoes, wall clips, etc., complete, to be blocked out from wall with 2in. iron lugs, oak blocks, or iron distance pieces secured with wrought nails.

Jointing.—Properly joint all pipes with red and white lead putty.

SMITH, PLUMBER, PAINTER AND GLAZIER.

Generally.—All lead to be milled lead of the weight stated, and to be well and truly laid, and to include for soldering, copper nailing, lead collars, and all lead wedges.

Chimney Aprons.—The apron to lower side of chimney to be 4-lb. lead, inserted $1\frac{1}{2}$in. into joint in brickwork, secured with lead wedges pointed in cement brought not less than 3in. down chimney and to lie 6in. on the tiles or slates; to be well worked round the return of chimney 3in., and there covered by the overflashing.

Soakers.—In all cases where the raking line of tiles or slates meets brickwork or stonework 4-lb. lead soakers or secret gutters are to be fixed one to each tile or slate, and turned up against wall 3in. above finished roofing surface, and to lie 5in. on tiles. To be covered where roughcast does not occur with 4-lb. stepped lead overflashings 8in. wide turned $1\frac{1}{2}$in. into joints in brickwork, and secured with lead wedges, and the joint pointed in cement.

E.C.—Provide strong galvanised iron sanitary pail with handles to E.C.

Bath.—(Describe Bath where required).

Waste.—Provide $1\frac{1}{4}$in. trapped galvanised iron waste from sink, and provide brass union and grid.

Water Supply.—(Describe where required). The run of every pipe should be thought out and indicated. All pipes must be made easily accessible by being run as far as possible on the face of the walls.

Glazing.—The whole of the windows are to be glazed after priming with seconds 26 or 32-oz. sheet glass, all well sprigged, bedded and back puttied after priming.

Painting.—The whole of the outside woodwork and the internal parts of outside doors and windows to be knotted, stopped, primed and rubbed down, and painted three oils. Prepare and paint all ironwork three coats, once before fixing and twice after.

The paint is to be composed of white lead, boiled linseed oil, turps, and approved tinting pigments, all well mixed.

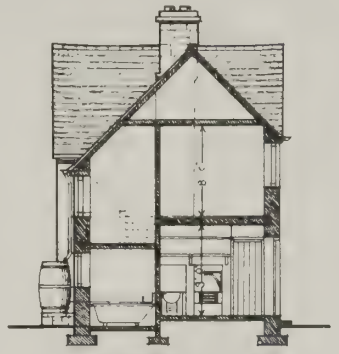
The wood work internally, except as specified in last paragraph, is to be prepared and stained with an approved oil stain or solignum.

Distempering and Whitewashing.—Size and distemper all plastered walls and ceilings two coats to approved tints. All ceilings and over picture rails to finish white.

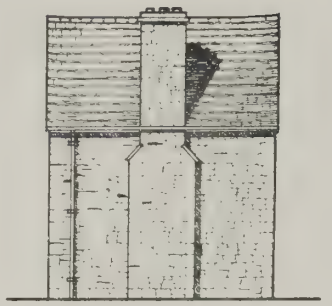
Generally.—Do all and everything to complete the whole in a thoroughly workmanlike manner, and to the entire satisfaction of the Architect.

COTTAGES FOR RURAL WORKERS IN WALES. (CLASS A)

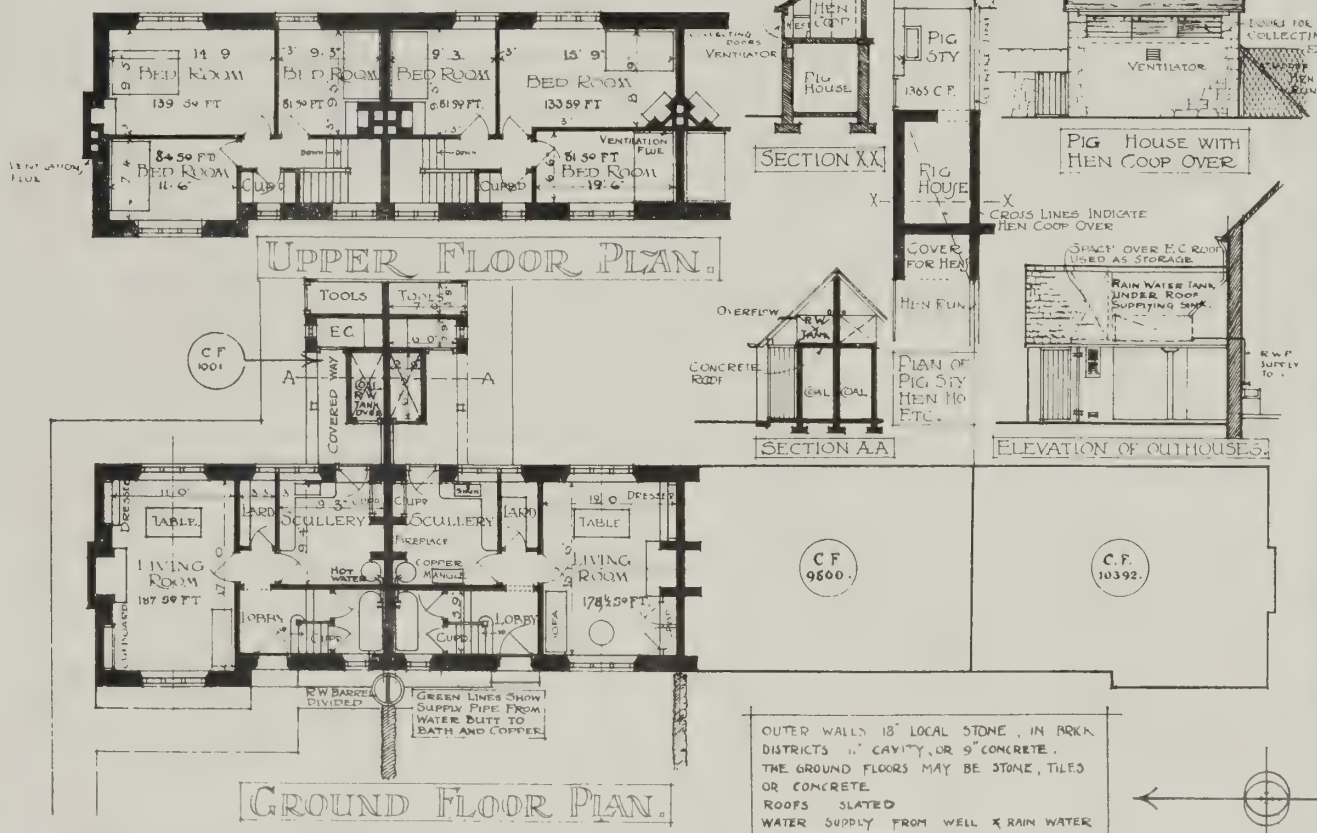
FRONT ELEVATION.



SECTION.



SIDE ELEVATION.



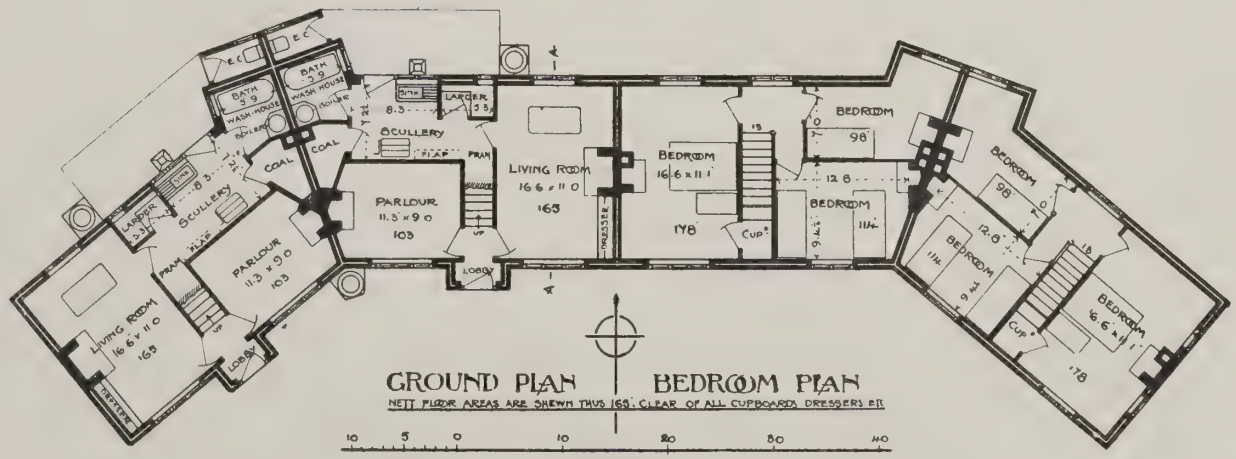
PRIZE DESIGN. Mr. J. Austin Laird, Licentiate R.I.B.A., 131 West Regent Street, Glasgow **PLAN No. 1**

ROYAL NATIONAL EISTEDDFOD OF WALES

FOVR COTTAGES FOR SOVTH WALES. CLASS B. by "SVNNYSIDE"

CVBIC CONTENTS 46,680' OR 11,670' PER COTTAGE (MEASVRED FROM 1' BELOW THE GD FLOOR TO HALF WAY VP ROOF

FRONT ELEVATION

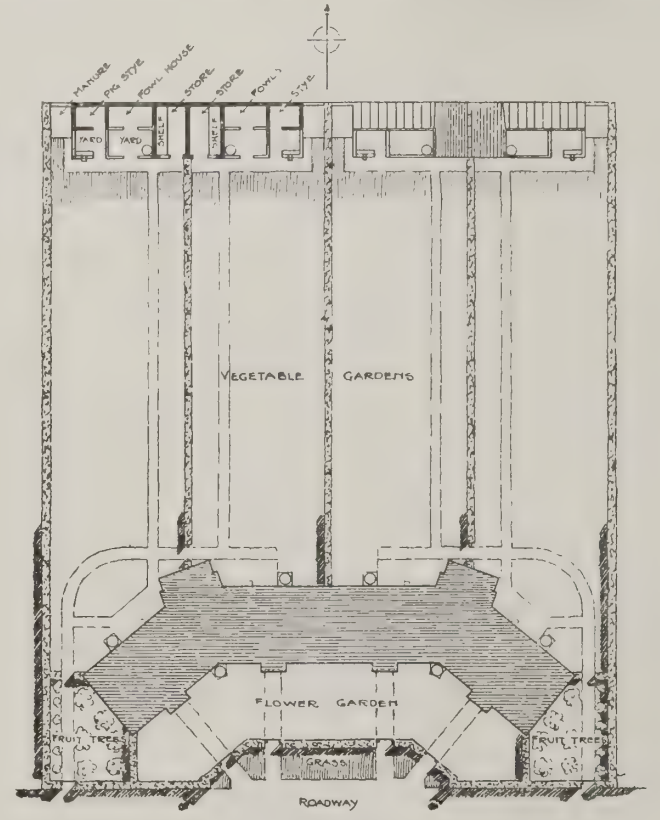


GROVND PLAN | BEDROOM PLAN

NETT FLOOR AREAS ARE SHEWN THVS 168. CLEAR OF ALL CVPBOARDS DRESSERS ETC

10 5 0 10 20 30 40

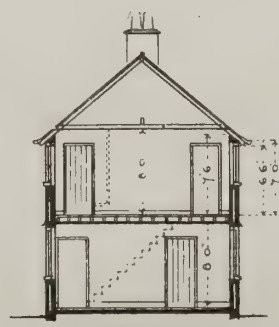
SCALE OF FEET



SITE PLAN SCALE 20 TO 1 INCH.

OVTBVILDINGS

BACK ELEVATION



SECTION A

MATERIALS ETC

EXTERNAL WALLS CALWAY, MONOLITH, HOLLOW CONCRETE. (NO SHVTTERING REQVIRED) CEMENT ROVGHCASTED AND WHITENED OVTSIDE AND SKIMMED WITHIN. 10" TOTAL THICKNESS

PARTY WALLS. AS ABOVE, 9" FINISHED THICKNESS.

PARTITIONS. 3½" FINISHED THICKNESS, AS ABOVE BVT SOLID BEDROOM DR 2½" DR AND WHERE NOT OVER WALLS BELOW, HYRIB METAL LATHING PLASTERED ON BOTH SIDES. ½" THICK.

FLOORS GROVND FLOOR LIVING ROOMS, 1½" RED DEAL TARRED VNDERNEATH AND NAILED DIRECT TO COKE BREEZE CONCRETE. REMAINDER CEMENT FINISH — BEDROOMS. WOOD JOISTS AND 1" WHITE BOARDING IF OBTAINABLE.

ROOFS SLATING ON FELT RVBEROID TO STYE & FOWL HOVSE

CEILINGS PLASTER ON HYRIB LATHING, IF CHEAPER THAN WOOD LATHS

CASEMENTS ½" WOOD ALL PANES IN THE PROPORTION OF 5 TO 9" AND 8" x 11⅛" CLEAR OF REBATE SLATE DRIPS OVER FRAMINGS

H.W SVPPLY BOILER IN BATH-ROOM AND WASH-HOVSE

B.C. MOVEABLE RECEPTACLE.

SVBSTITVTES. ACCORDING TO DISTRICT; 11 HOLLOW BRICK WALLS, OR STONE, OR VERTICAL SLATE HANGING TO VPPER STOREY ON STVDWORK WITH METAL LATHING & PLASTER INSIDE. THIS WOVLD BE A VARIATION FROM THE BYE LAWS

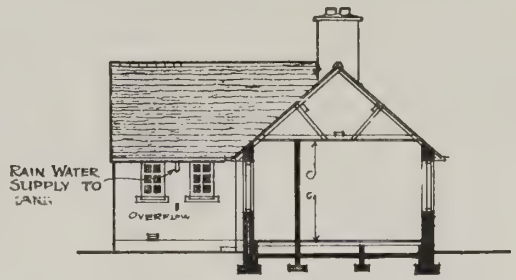
PRIZE DESIGN Mr. H. Heathman, Licentiate R.I.B.A., 10 Station Road, Ashley Down, Bristol **PLAN No. 2**

CLASS C.

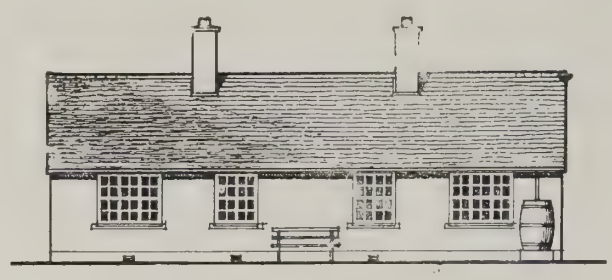
COTTAGES FOR RURAL WORKERS IN ANGLESEY.

CORACLE.

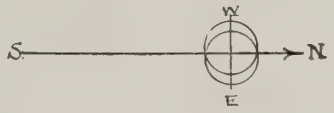
EAST ELEVATION.

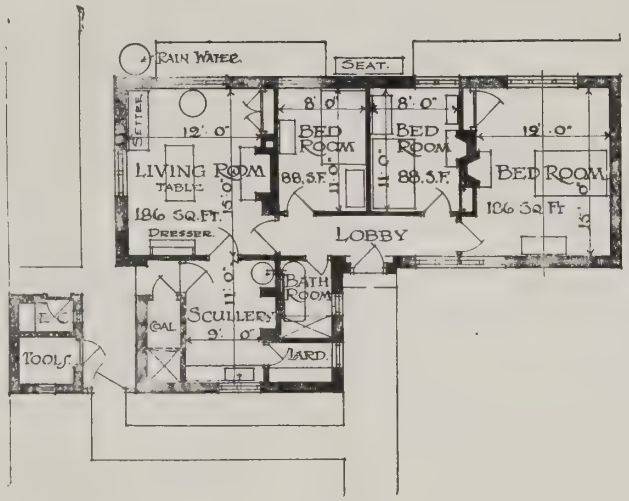


SECTION.



WEST ELEVATION.

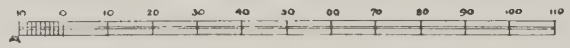




PLAN.

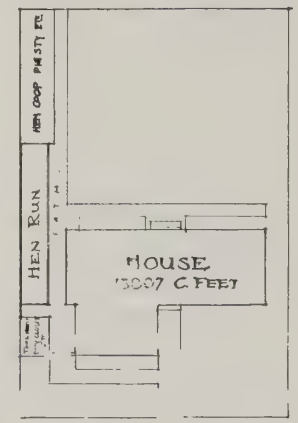
OUTER WALLS 18" LOCAL STONE IN BRICK DISTRICT 11" CAVITY OR 9" CONCRETE.
THE GROUND FLOOR CAN BE STONE, TILE OR CONCRETE ROOFS SLATED.
WATER SUPPLY FROM WELL & RAIN WATER.

SCALE FOR BLOCK PLAN



SCALE FOR ELEVATIONS & PLANS.

NOTE
THE BUILDINGS IN CONNECTION WITH PIG-STYE, POULTRY RUN ETC., WILL BE SAME AS SHEWN FOR DESIGN A



BLOCK PLAN.
SCALE 1 - 20 FEET

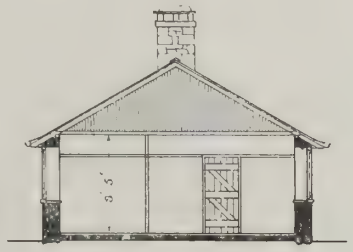
25

PRIZE DESIGN. (Bracketed) Mr. J. Austin Laird, Licentiate R.I.B.A., 131 West Regent Street, Glasgow **PLAN No. 3**

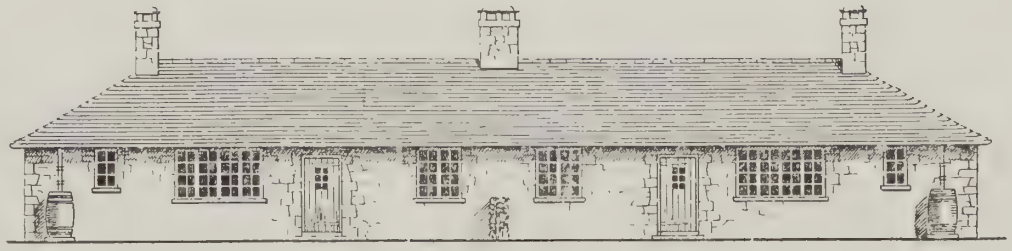
Royal National Eisteddfod of Wales.

Pair of Labourers' Cottages for Anglesey.

Class C.



Section A.

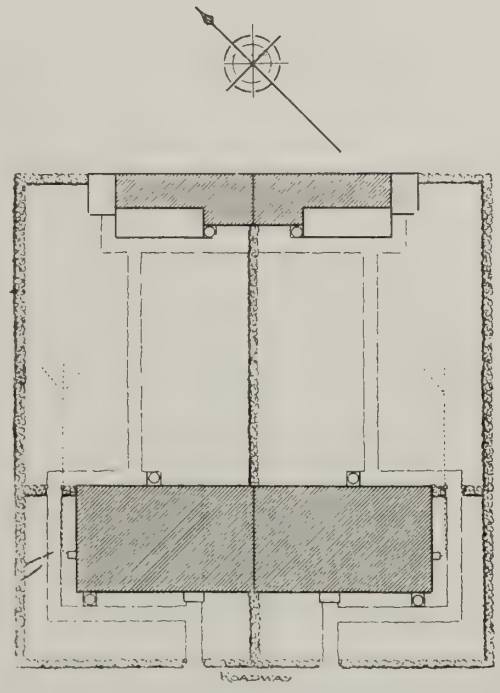


Front Elevation.

Elevation.

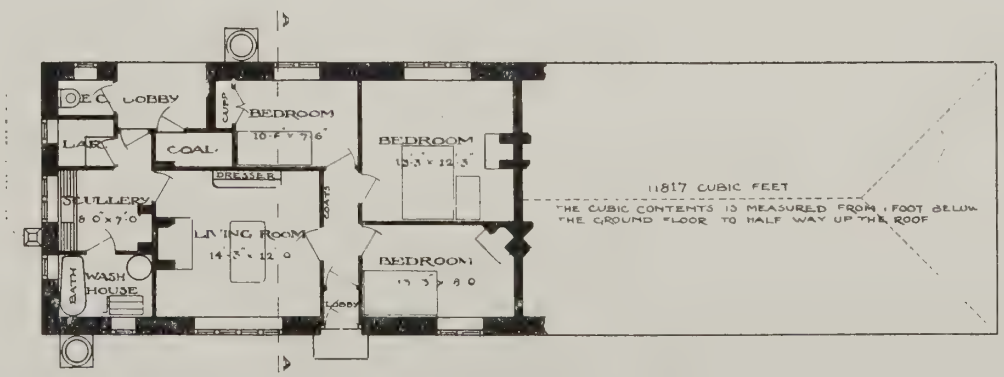
Back Elevation

Plan.



Site Plan

Scale of Feet



Plan

Scale of Feet

Materials

Walls — External, stone plastered inside. Party 9" brick or stone. Internal, 3 concrete block, skimmed.

Floors — Living room, 4" cement concrete, and ½" coke breeze topping with floor boards tarred underneath and nailed direct or covered with linoleum pasted down if more easily obtainable. Scullery etc 6 concrete granolithic finish. Bedrooms same as living room.

Roofs — Slate.

Ceilings — Plastered on expanded metal lathing.

Windows — Casements ratio of width to height 3 ft 1 to ½.

E.C. — Under main roof receptacle moveable.

Hot water — Portable boiler in wash house.

Drainage — According to circumstances would be beneficial if used to subirrigate the garden.

Non. of Plume

PRIZE DESIGN. (Bracketed)

Miss E. D. Blacker, 4 Colston Street, Tramways Centre, Bristol

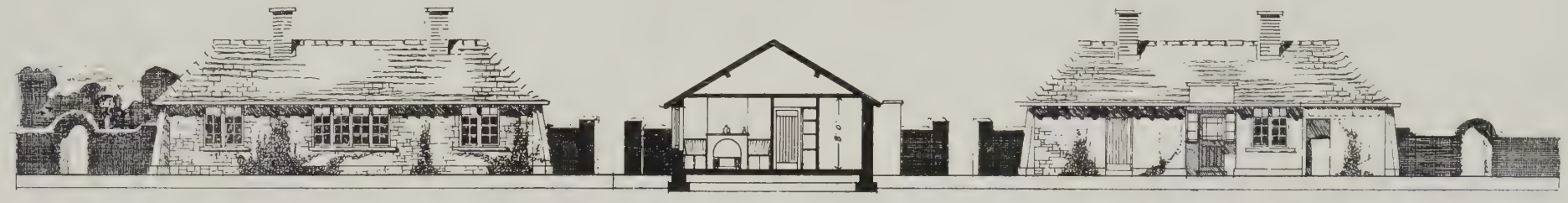
PLAN No. 4

Walls. Native stone squared rubble coursed or rubble roughcasted
Suitable for all parts of Wales where stone is found; other districts brick or concrete blocks roughcasted
Roofs: of Welsh slates
Floors concrete + tiles, skimtings in cement
Yards: stone paving or cement concrete
Closets Earth Pail Mowles Patent
Slop water on to land 30 yards away

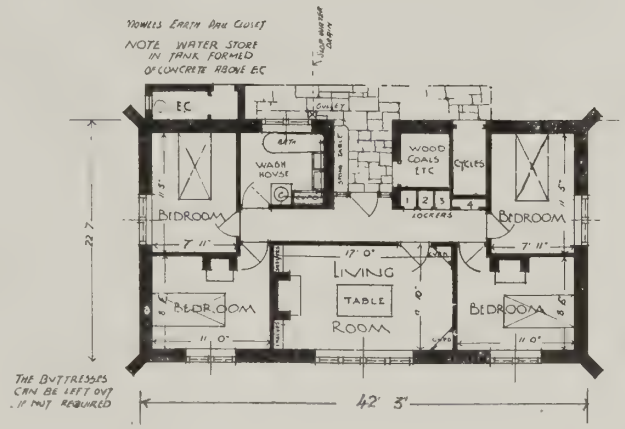
ROYAL NATIONAL EISTEDDFOD OF WALES

LIVING-IN QUARTERS FOR AGRICULTURAL LABOURERS

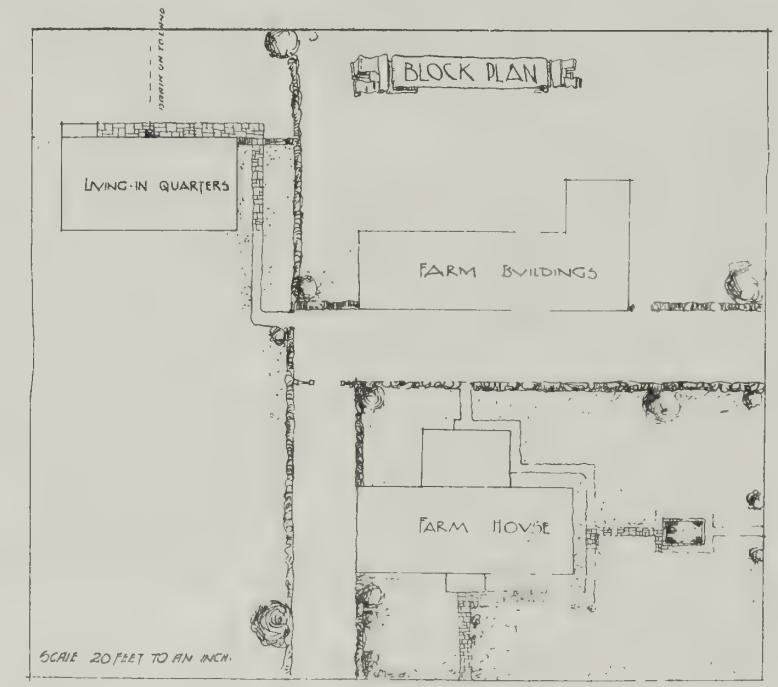
CUBICAL CONTENTS
11238 CUBIC FEET
WHERE A SUPPLY OF WATER CAN BE OBTAINED
A SEPTIC TANK SYSTEM CAN BE INSTALLED



FRONT ELEVATION SECTION BACK ELEVATION



PLAN



SCALE 0 5 10 15 20 30 40 50 60 OF FEET
SCALE 8 FEET TO AN INCH

MISKIN

PRIZE DESIGN. (First) Messrs. Thomas & Morgan, 23 Gelliwastad Road, Pontypridd **PLAN No. 5**

Royal National Eisteddfod
Cottage Competition
Living in Quarters

By "Gwynedd"

WHO IS ON ACTIVE SERVICE IN FRANCE & HAS NO OTHER MATERIALS THAN THIS SHEET OF SCALE PAPER NOT THE RIGHT SIZE & CANNOT PUT IT FLAT. HE APOLOGISES & BEGS THAT UNDER THE CIRCUMSTANCES HE MAY BE PERMITTED TO ENTER THE COMPETITION

SCALE OF 0 1 2 3 4 5 6 7 8 9 10 15 20 25 30 35 40 45 50 FEET

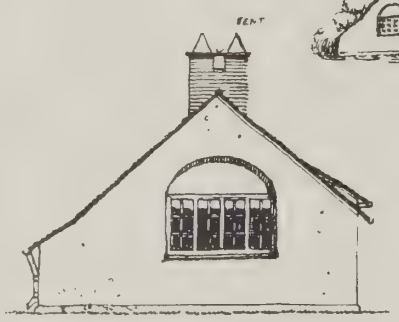
SIDE ELEVATION (S.E.)

Cubic Area

59·0 x 17·0 x 12·0 = 12[illegible]
17·0 x 4·6 x 8·0 = 612
TOTAL 12648 cub. ft.

MEASURED FROM BOTTOM OF FOUNDATIONS TO HALF WAY UP THE ROOF

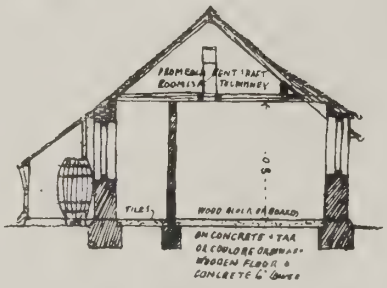
SITE PLAN
SCALE OF 20 FT TO AN INCH



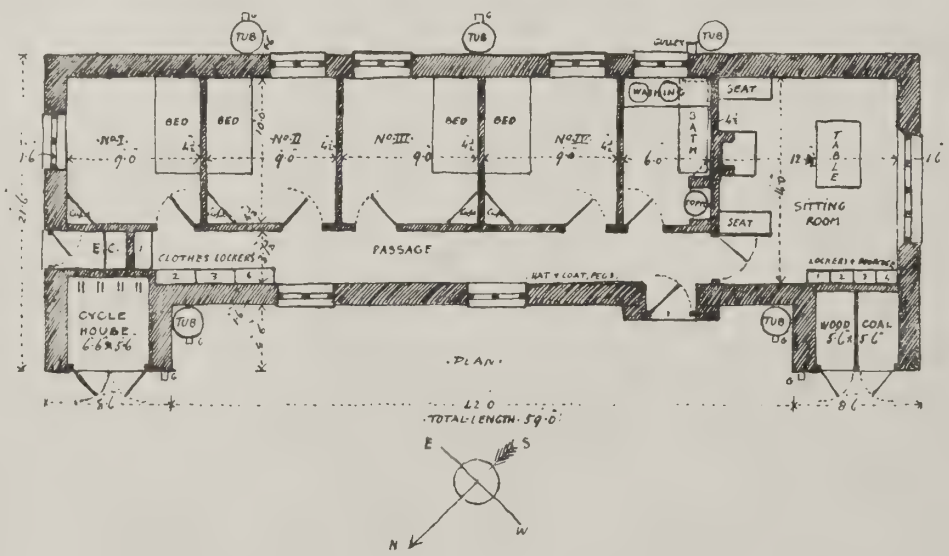
END ELEVATION (S.W.)

SKETCH

NOTE THE ROOF THE SAME PITCH AS THE ADJACENT BUILDINGS



SECTION



PLAN

Notes etc.

THIS BUILDING HAS IS LOCAL STONE WALLS COVERED WITH LIME WHITED CEMENT ROUGHCAST WITH PUDLO MIXED IN IT. THE ROOFS SHOULD BE SLATED TO ACCORD WITH FARM HOUSE & BUILDING BUT IF THEY HAVE VERY THIN SLATE ON THEM THIS SHOULD BE COVERED WITH THE SAME SIZE IN THICK 2nd OR 3rd. THE CHIMNEY SHOULD MATCH ALSO BUT IF EXISTING BUILDING HAVE VIOLENT RED BRICKS THIS SHOULD BE BRINDLED, IF YELLOW IT IS TO BE WHITE ROUGHCAST RIDGES TO MATCH, SLATE CHIMNEY CAP, PAINTING TO MATCH. THE INTERNAL WALLS OF 4½" BRICK OR CONCRETE SLAB IF CHEAPER, REINFORCED CONCRETE LINTOLS TO EXTERNAL OPENINGS.

THE RAIN WATER IS COLLECTED IN TUBS FOR ECONOMY (THOUGH SLATE CISTERNS CONNECTED BY PIPES TO A PUMP WOULD BE BETTER) THOSE IN FRONT ARE CONNECTED BY A PIPE WITH A BRANCH GOING THROUGH THE WALL TO A SMALL SUNK PIT UNDER THE WASHING BASINS & FITTED WITH A TAP.

THE BUILDING WOULD BE TURNED THE BEST WAY TO SUIT THE PARTICULAR SITE & OTHER BUILDINGS & THE PLAN COULD BE REVERSED ALL 4 WAYS TO GET GOOD ASPECT & RUN ALWAYS REMEMBERING THE S.W. GALES.

ON THE OUTER BEDROOM WALL I HAVE SHEWN THE ROOF INTERNALLY STARTING AT 7 FEET AS IT WAS ALLOWED IN THE ROOFS OF THE COTTAGES & SAVES WALLING ETC BUT IF NOT ALLOWED IT MUST START AT 5 FEET AND ANOTHER 300 CUBE FEET MUST BE ADDED TO THE TOTAL CUBIC AREA

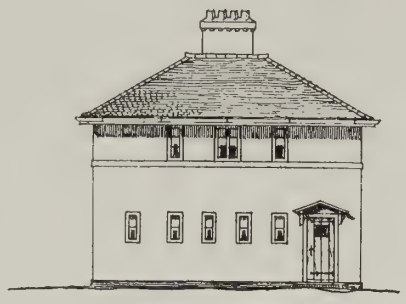
PRIZE DESIGN. (Second) Mr. H. L. North, F.R.I.B.A., Llanfairfechan **PLAN No. 6**

"PAN"

ROYAL NATIONAL EISTEDDFOD OF WALES. NEATH 1918.

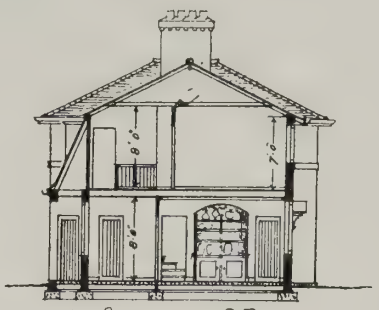
COMPETITION DESIGN FOR COTTAGES.

CLASS A°

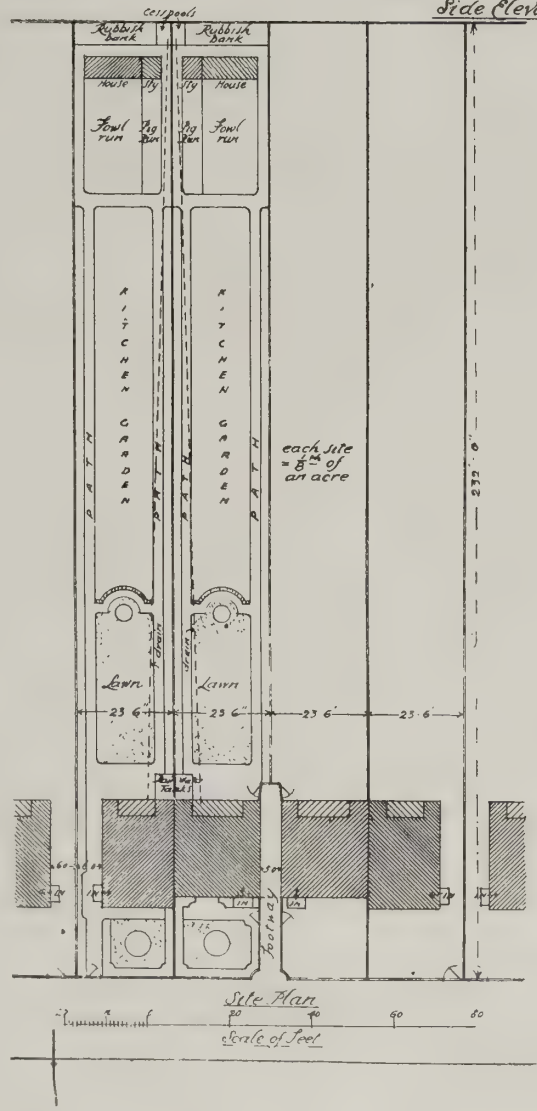


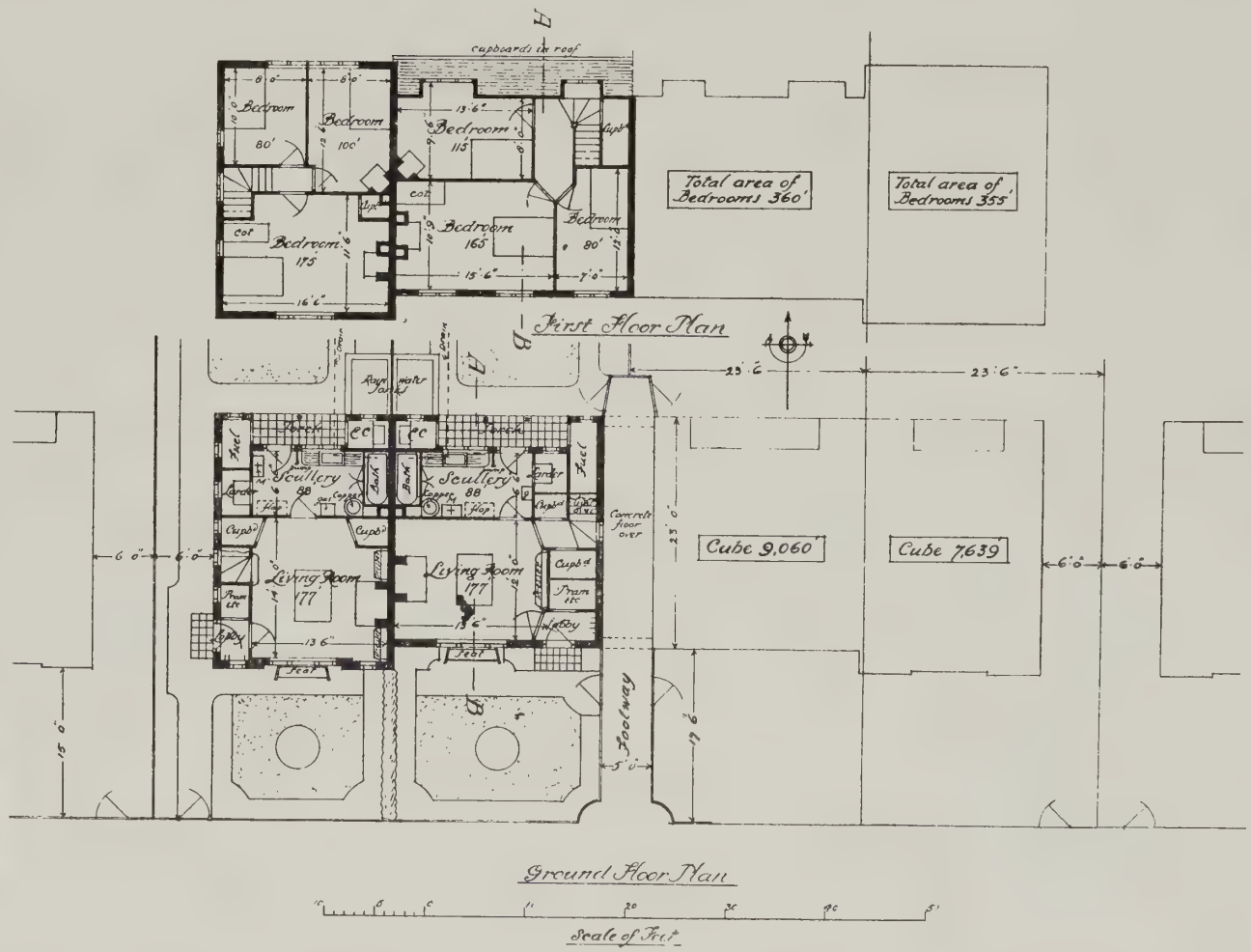
Side Elevation

Front Elevation



Section at A.B.





Notes as to Design

Roofs are arranged simply and guttering kept at one level so that rain water can be collected in underground tanks at the rear. E.C & Fuel approached from open Porch

Materials

Foundations 9" concrete
Walls 11" hollow brick or concrete according to locality and rough casted externally
Ground floor of 4"C concrete & 1" floor boards nailed to breeze firring blocks
First floor of home grown timber
Roof of home grown timber & local slates of flags
Windows casements with cut bars

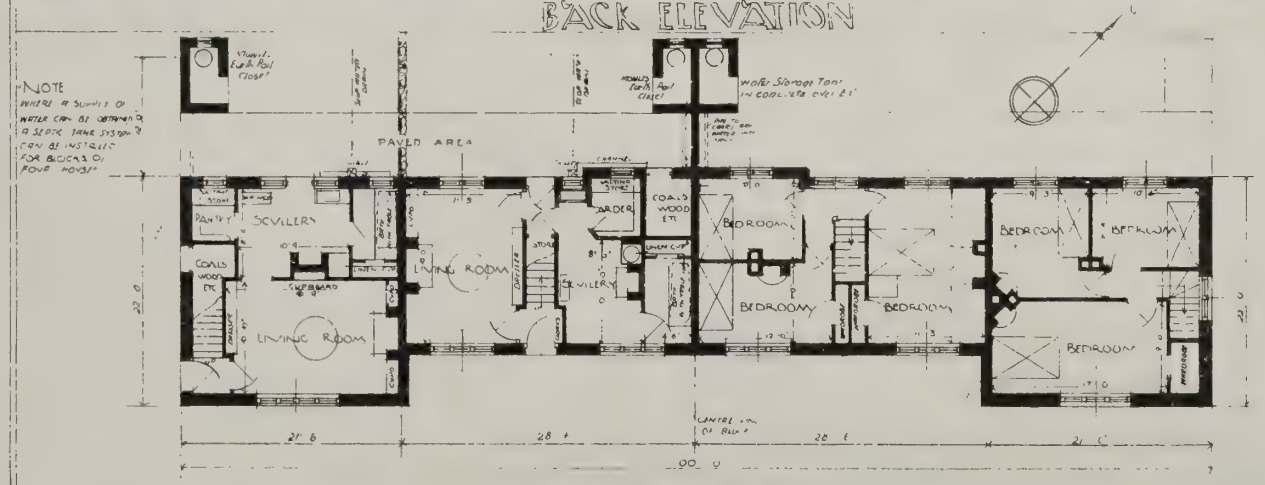
Mr. C, H. Norton, Licentiate R.I.B.A., 14 Bedford Row, London

PLAN No. 7

ROYAL NATIONAL EISTEDDFOD OF WALES

FRONT ELEVATION

BACK ELEVATION



GROUND PLAN

SCALE
8 FEET TO AN INCH

SCALE

"CLASS A"

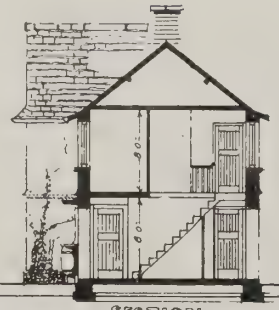
WALLS Native stone squared rubble coursed or rubble roughcasted suitable for all parts of Wales where stone is found, other districts brick or concrete blocks roughcasted.

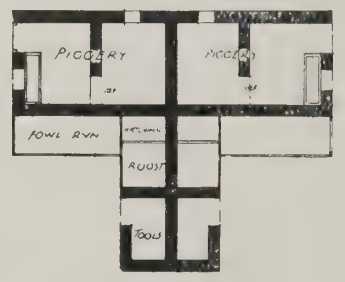
ROOFS: of Welsh slates: Ground floors of Concrete & tiles. First Floor re-inforced concrete with Linoleum or Boarded surface: Skirtings in cement. Stone paving or concrete to yard: Slop water taken on to garden.

CUBICAL CONTENTS

END HOUSE	9696	cub. ft.
MIDDLE "	10293	
PIGGERY TOOLS AND E.C.	2300	

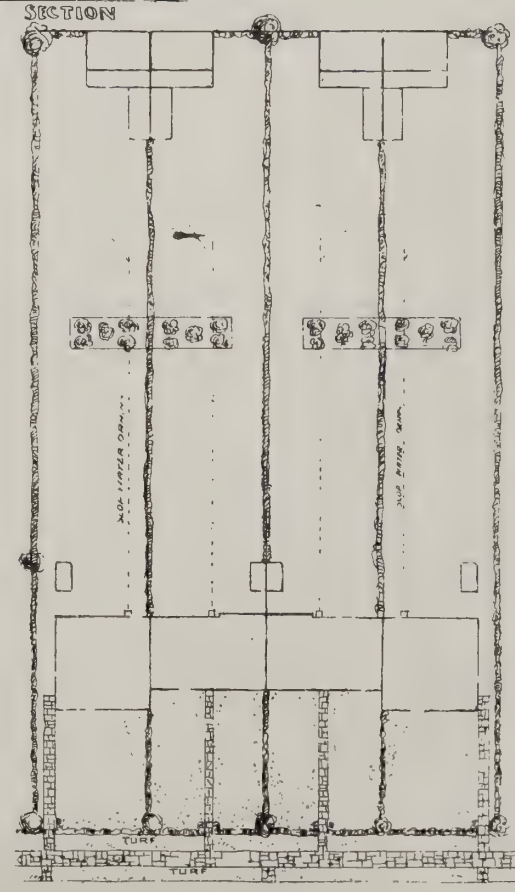
Mowles Earth Pail Closet





PLAN OF PIGGERY ETC.

SECTION



SITE PLAN
SCALE 20FT 1 INCH

MISKIN

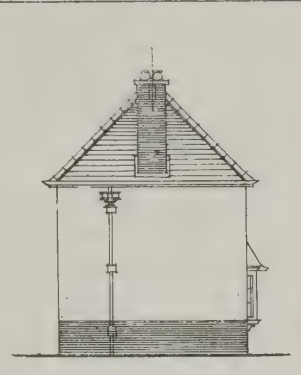
Messrs. Thomas & Morgan, Architects, 23 Gelliwastad Road, Pontypridd

PLAN No. 8

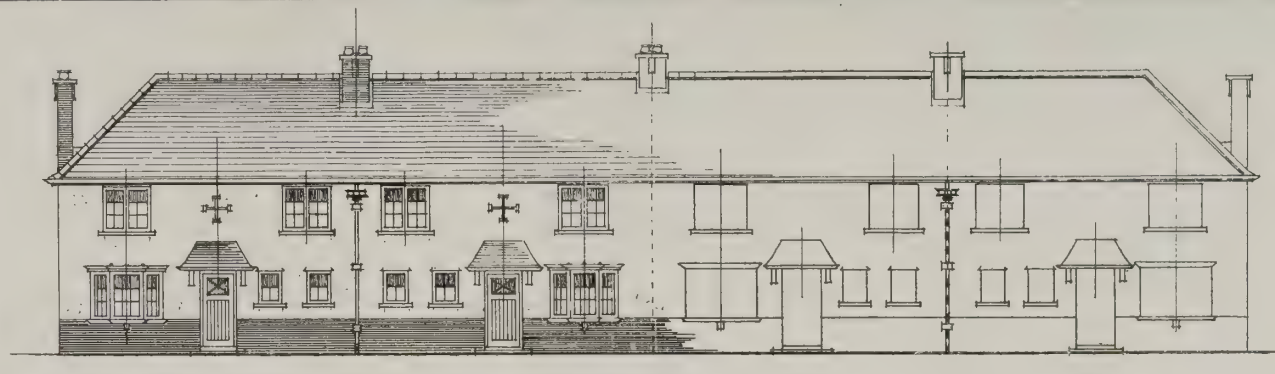
WELSH NATIONAL EISTEDDFOD AT NEATH 1918

DESIGN for BLOCK of FOUR COTTAGES: CLASS "A"

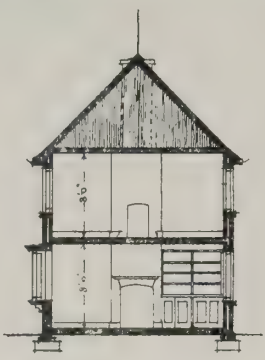
HOUSING OF AGRICULTURAL LABOURERS



END ELEVATION



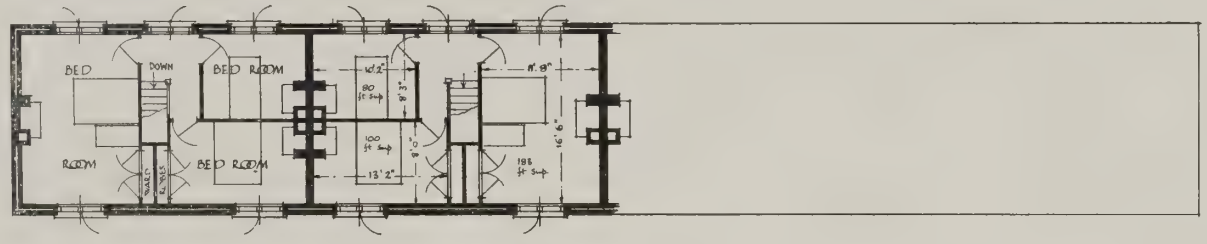
FRONT ELEVATION



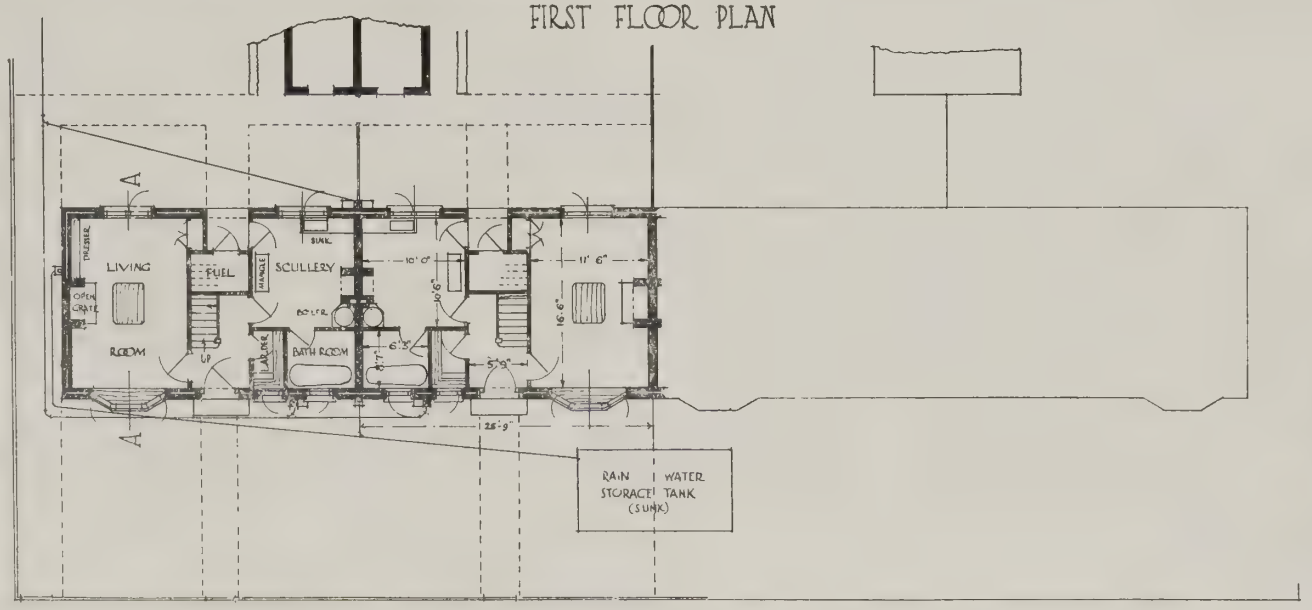
SECTION ON LINE "AA"

MATERIALS		CUBICAL CONTENTS OF ONE COTTAGE. 11,260 cu ft
FOUNDATIONS	: Concrete.	
EXTERNAL WALLS	: 11" Brick (cavity) & Rough-cast	
INTERNAL "	: 4½" " & Slab-partitions.	
FLOORS	: Tiles to Scullery, Bath-rm &c: Wood to Living Rm	
ROOFS	: Welsh slates on timber.	
WATER SUPPLY	: Pumped from R.W. Storage tank to Supply tank in Roof	

NOM DE PLUME. "IFOR BACH"

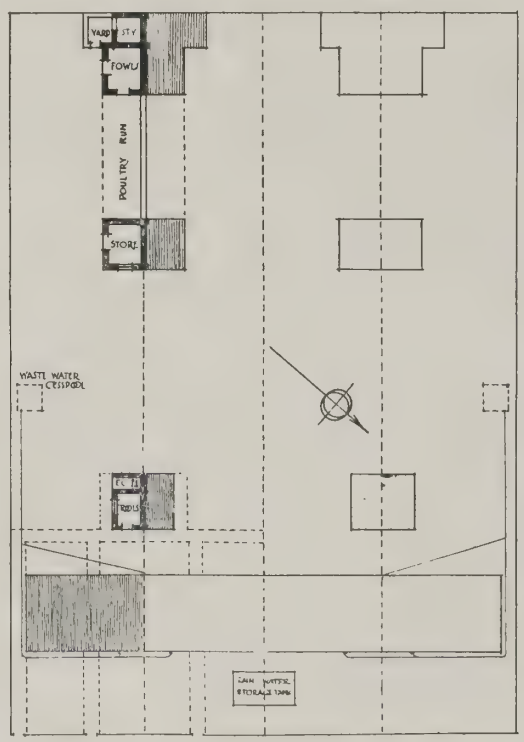


FIRST FLOOR PLAN



SCALE: 8 FT TO 1 INCH

GROUND FLOOR PLAN



BLOCK PLAN SCALE: 20 FT TO 1 INCH

Mr. T. A. Beavan, Queen's Chambers, Cardiff

PLAN No. 9

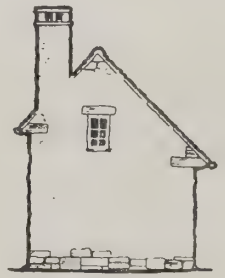
CLASS "A"

WELSH HOUSING COMPETITION

· DESIGN · BY · "VECTIS"

· SECTION

· ROAD · FRONT ·



END ·

· SUITABLE · FOR · ERECTION · IN ·

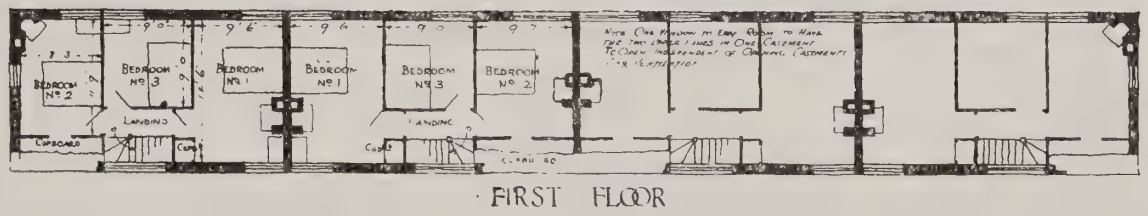
· THE · COUNTIES · OF · · · ·

· DENBIGHSHIRE · FLINTSHIRE ·

· CARNARVONSHIRE · MERIONYDDSHIRE ·

· MONTGOMERYSHIRE · AND · ·

· MONTMOUTHSHIRE · · · ·

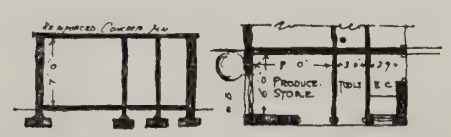

Bedroom No. 2
Bedroom No. 3
Landing
Cupboard
Bedroom No. 1
Bedroom No. 1
Bedroom No. 3
Landing
Cupboard
Bedroom No. 2
Note One Window in Each Room to have Two Lower Lights in One Casement to Open Independent of Ordinary Casement for Ventilation

· FIRST · FLOOR

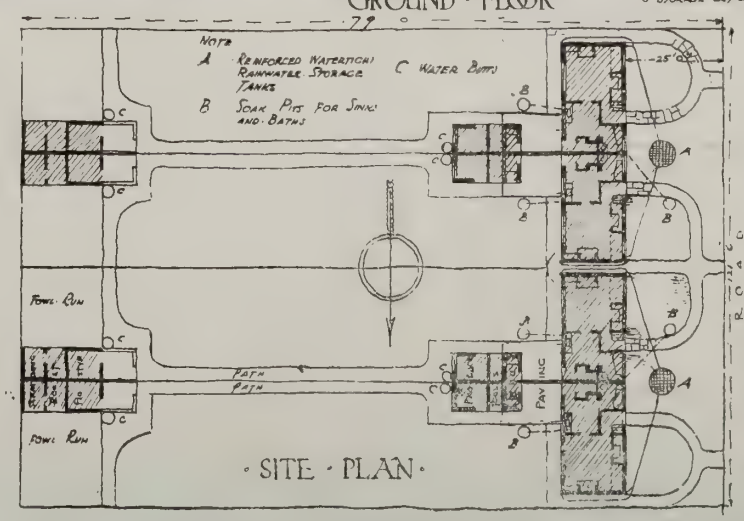
· GROUND · FLOOR

· SECTION

· PLAN ·



SECTION · PLAN



· SITE · PLAN ·

FLOOR AREAS		END HOUSES (EACH)
Living Rm	173	Cubic Contents Measured
Scullery	70	Outside Taken 12" Below
Bedroom 1	138	Floor 8·995 Cu. Feet
" 2	95	Outbuildings including
" 3	81	Pigstye & Fowl House 1928

FLOOR AREAS		CENTRE HOUSES (EACH)
Living Rm	171	Cubic Contents Measured
Scullery	68	Outside Taken 12" Below
Bedroom 1	138	Floor 9220 Cu Feet
" 2	107	Outbuildings including
" 3	81	Pigstye & Fowl House 1928

MATERIALS

Exterior walls local stone with 14" cavity brick above covered with rough cast the whole waterproof if bricks cannot be obtained walls to be of local stone thickness according to local custom Roof covered with slates with half round stamp ridge walls on first floor 2" breeze concrete. Floors ground floor 4" cement Qn rendered in cement to Scullery Larder Coals & Bathrm Other Position 4" cement Qn covered with a patent flooring First floor Cement Concrete 2½" thick reinforced with 4mm floor surface finished with a patent flooring Reinforced concrete lintols over all internal Door & Window Openings Local stone lintols Exterior Concrete Shelves to Larder windows Solid. Frames and Casements

Mr. W. A. Greenen, Fellows Road, Cowes, Isle of Wight

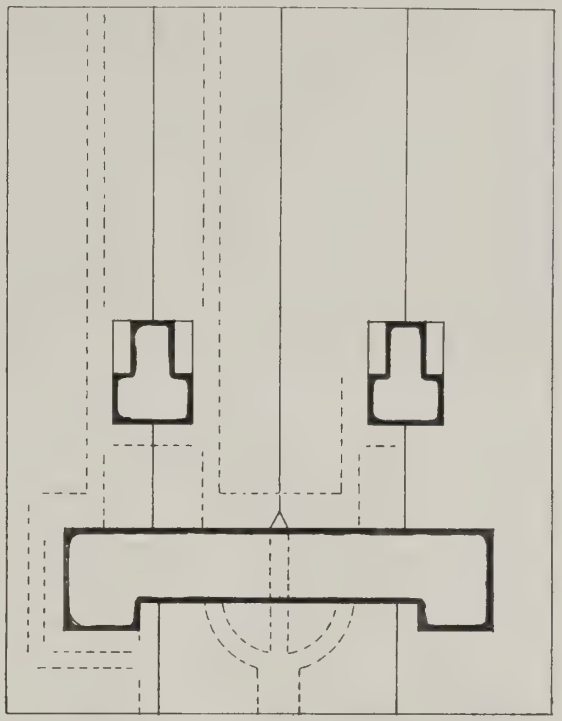
PLAN No. 10

CLASS A

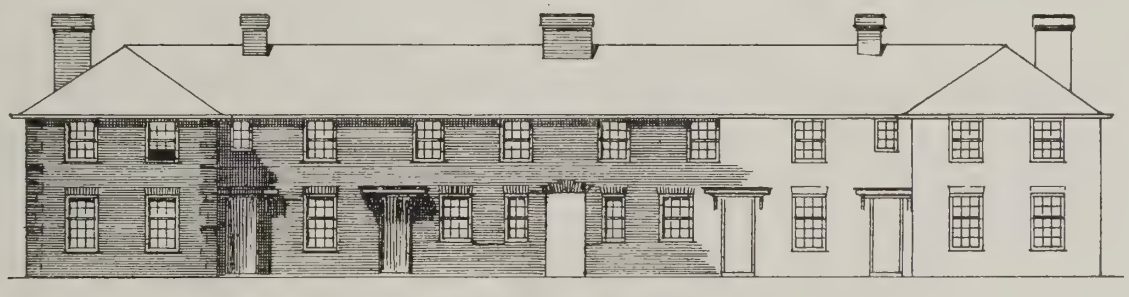
DESIGN FOR COTTAGES

END COTTAGES 9,940 FEET CUBE
MIDDLE , , 9,900 , , , ,

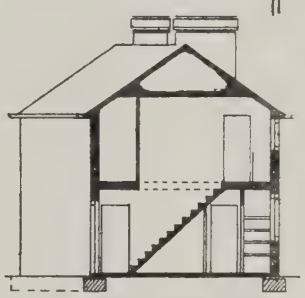
BACK ELEVATION



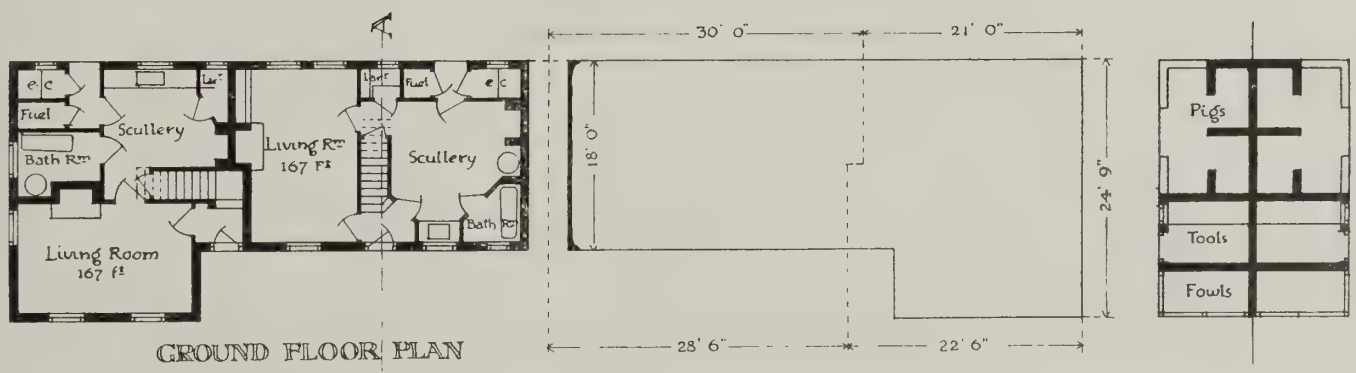
BLOCK PLAN · SCALE 20FT TO 1 INCH



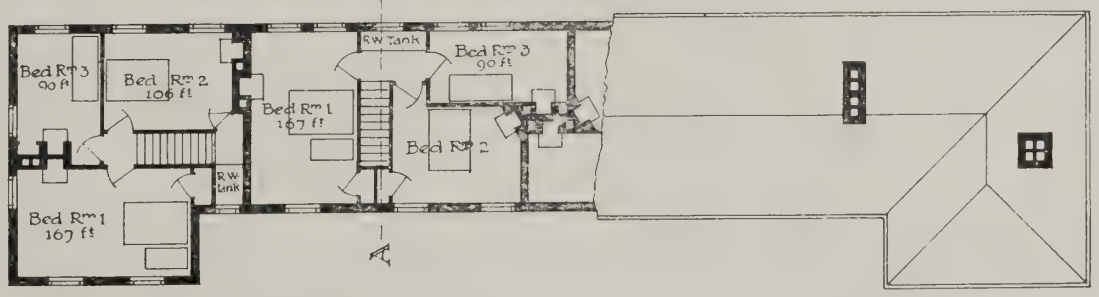
FRONT ELEVATION



SECTION A-A



GROUND FLOOR PLAN



UPPER FLOOR PLAN

PLAN OF ROOF

CAMBRENSIS

Mr. E. A. Rickards, F.R.I.B.A., 47 Bedford Square, London, W.C. 1 **PLAN No. 11.**

CLASS B

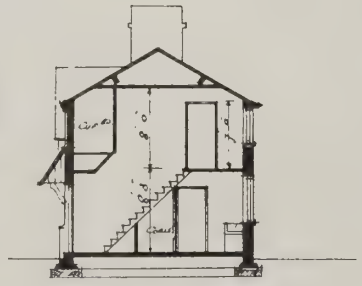
ROYAL NATIONAL EISTEDDFOD of WALES

∴ 1918 ∴

DESIGN BY
"DOMESTICUS"

SOUTH ELEV

FRONT ELEVATION



SECTION A B

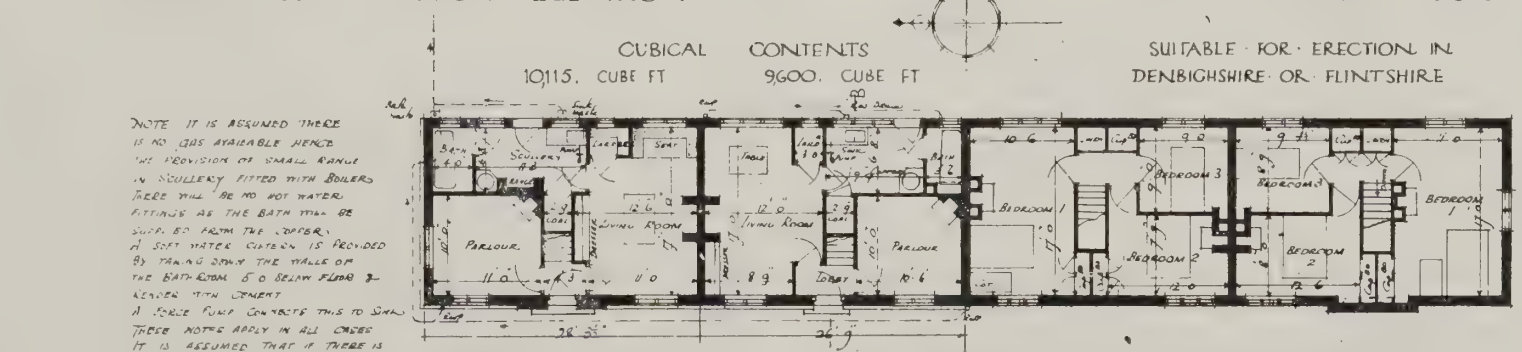
SCALE 8 FEET TO AN INCH

TOWARDS ROAD

CUBICAL CONTENTS
10,115. CUBE FT
9,600. CUBE FT

SUITABLE FOR ERECTION IN
DENBIGHSHIRE OR FLINTSHIRE

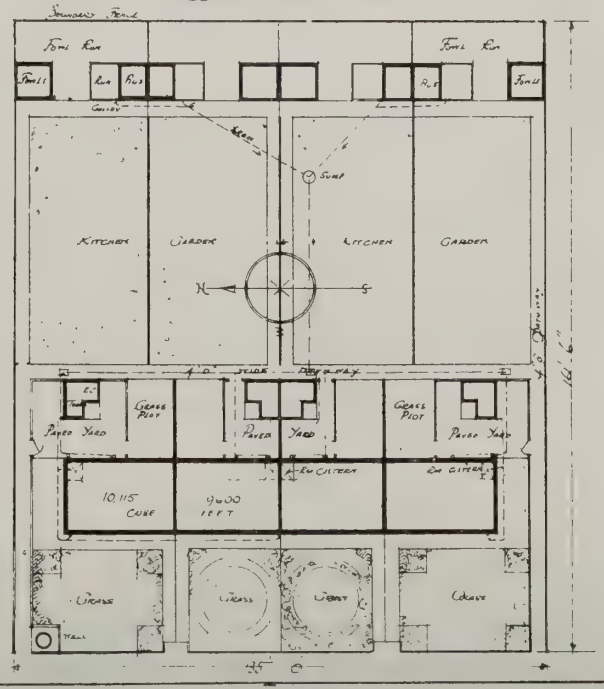
NOTE IT IS ASSUMED THERE IS NO GAS AVAILABLE HENCE THE PROVISION OF SMALL RANGE IN SCULLERY FITTED WITH BOILERS THERE WILL BE NO HOT WATER FITTINGS AS THE BATH WILL BE SUPPLIED FROM THE COPPER A SOFT WATER CISTERN IS PROVIDED BY TAKING DOWN THE WALLS OF THE BATH ROOM 6'0 BELOW FLOOR & LEVELLED WITH CEMENT A FORCE PUMP CONNECTS THIS TO SINK THESE NOTES APPLY IN ALL CASES IT IS ASSUMED THAT IF THERE IS NO MAIN EXISTING ONE CAN BE SUNK WHERE SHOWN OR THEREABOUTS



GROUND PLAN

FIRST FLOOR PLAN

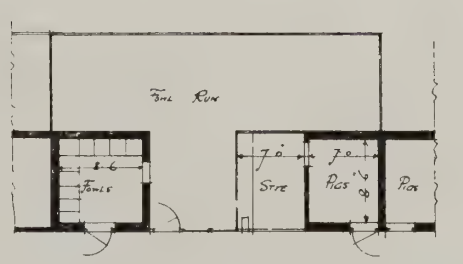
BLOCK PLAN
SCALE 20 FEET TO AN INCH



Materials

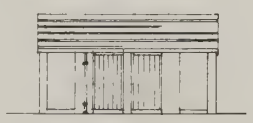
WALLS EXTERNALLY 11" HOLLOW BRICK LIMEWHITED ABOVE PLINTH TO FIRST FLOOR LEVEL WITH CEMENT ROUGHCAST ABOVE. LOCAL STONE PLINTH 18" THICK.
ROOFS HEAVY SLATES
FLOORS 6" CEMENT CONCRETE TO GROUND FLOOR ROOMS
FIRST FLOOR 2½" SLAB CONCRETE REINFORCED WITH SEAMS AS NECESSERY
PARTITIONS 4½" WALLS & 3" COKE BREEZE SLABS TO BEDROOMS
WINDOWS WOOD CASEMENTS IN TWO SIZES

LONGITUDINAL SECTION E F



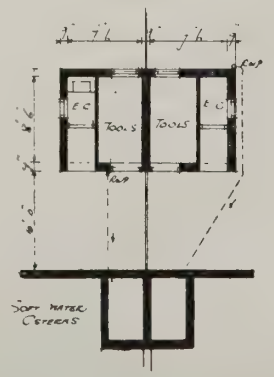
PLAN OF FOWL HOUSE &C
CUBICAL CONTENTS WITH TOOLS &EC
1800 CUBE FT

SECTION C D



ELEVATION

PLAN OF OUTBUILDINGS



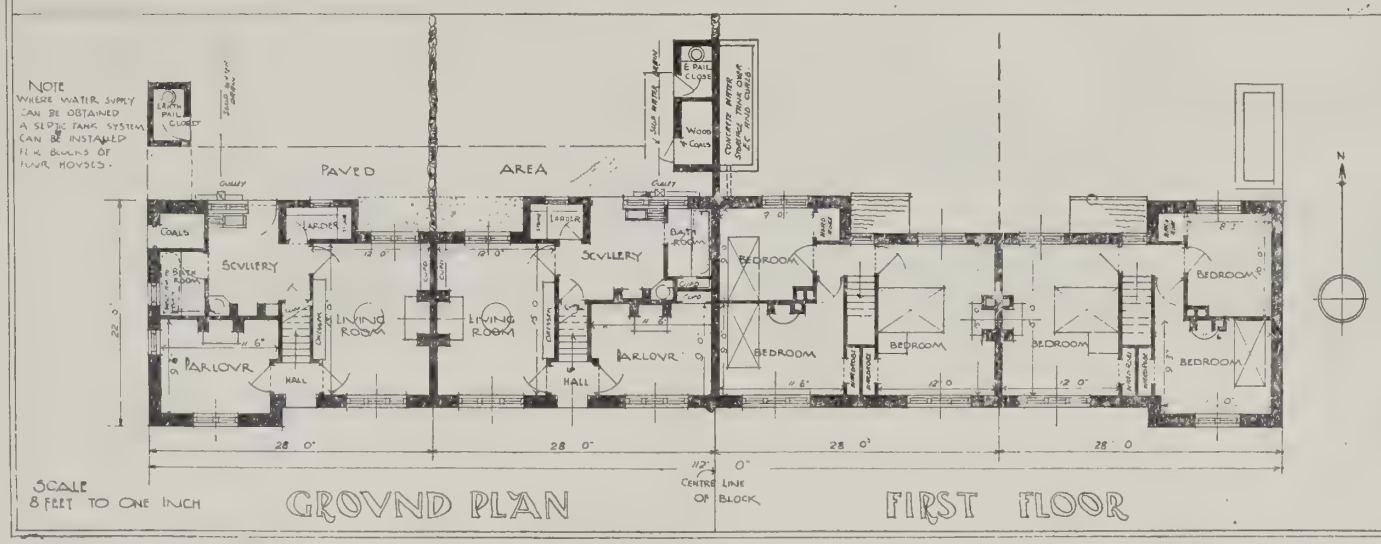
Mr, W. A. Kneller, Old Chester Road, Rock Ferry, Cheshire

PLAN No. 12

ROYAL NATIONAL EISTEDDFOD OF WALES

FRONT ELEVATION

BACK ELEVATION



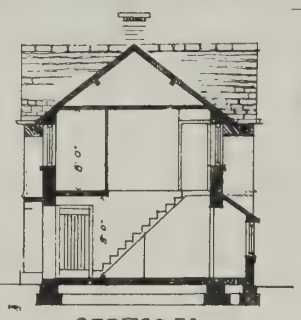
GROUND PLAN FIRST FLOOR

CLASS B"

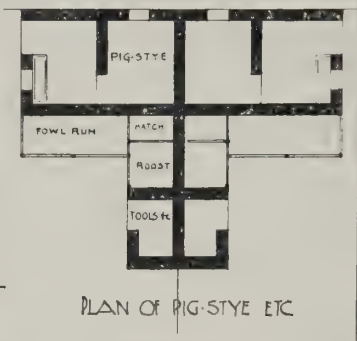
WALLS: Native stone squared rubble coursed or rubble roughcasted suitable for all parts of Wales where stone is found, other districts brick or concrete blocks roughcasted:

ROOFS. of Welsh slates. Ground Floors of Concrete & tiles. First Floor re-inforced concrete with Linoleum or Boarded Surface Skirtings in Cement Stone paving & Concrete to Yard. Slop water taken on to garden:

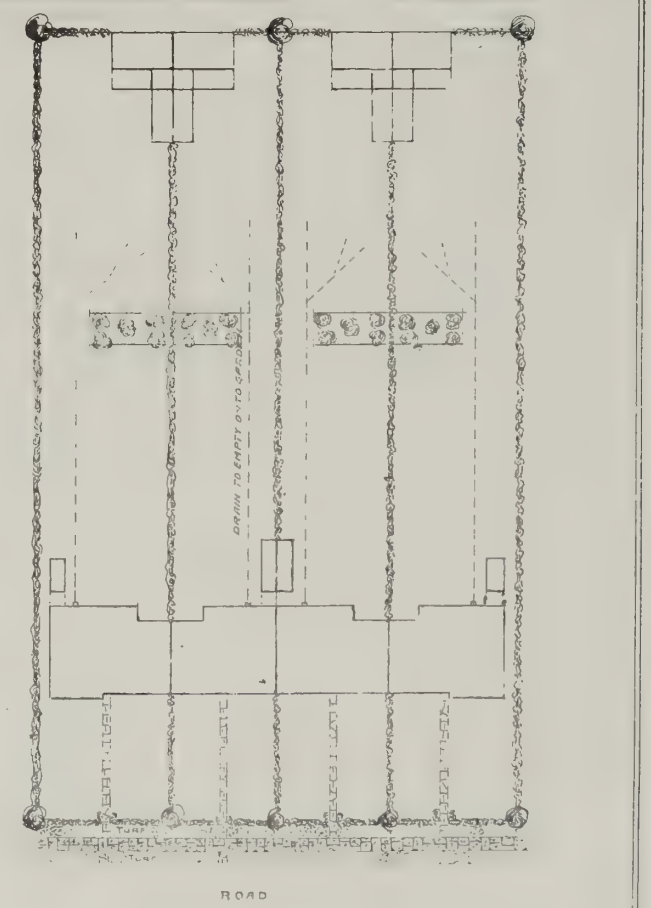
CUBICAL CONTENTS	
END. HOUSE	11360. C.F^t
MIDDLE	10944 "
PIG-STYE E.C & TOOLS	2300 "



SECTION



PLAN OF PIG-STYE ETC



SITE PLAN

SCALE 20 FEET TO AN INCH

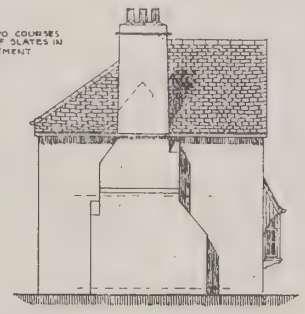
-TYVICA-

Messrs. Thomas & Morgan, 20 Gelliwastad Road, Pontypridd

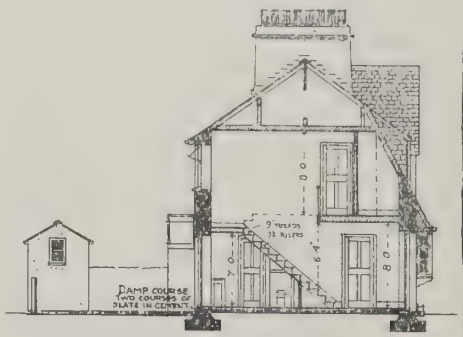
PLAN No. 13

ONAN

ELEVATION TO ROAD

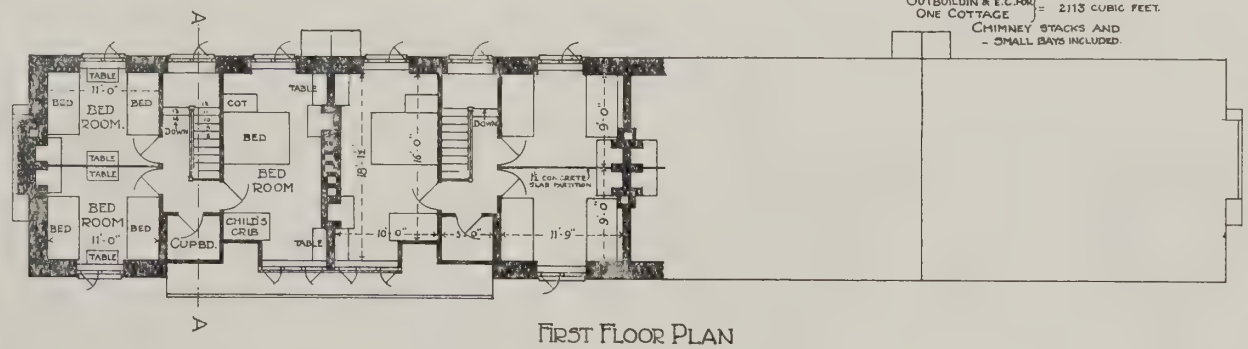


END ELEVATION



SECTION AA

CUBIC CONTENTS.
ONE COTTAGE = 12874 CUBIC FEET.
OUTBUILDIN & E.C.FOR ONE COTTAGE } = 2113 CUBIC FEET.
CHIMNEY STACKS AND - SMALL BAYS INCLUDED.



FIRST FLOOR PLAN

MATERIALS &c.

WALLS Rubble masonry with roughcast on external faces. As suitable stone for this class of work abounds in almost every part of Wales a tradition in cottage building has been evolved in the past, with walls as above whitened, and roofs of small slates. This tradition is followed in this design, so that these cottages are suitable for erection in any stone district.

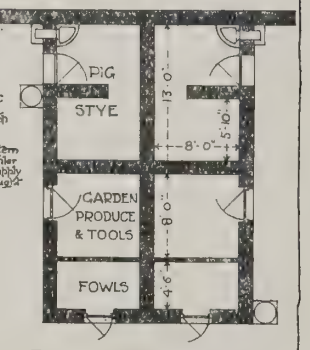
ROOFS: Small slates. All valleys formed with the slates as in old work in the rural districts. Flashings formed with slates built into the chimney stacks &c and cement under same. This is also a mode of construction found in old work.

FLOORS: Scullery, Larder, Bath Room and Entrance Lobby,- tiles. Living Room & Parlour,- boards on battens flush with the faces of the concrete. Fuel Store, E.C & Outbuilding,- cement on concrete. First Floor,- boards on joists.

WINDOWS Each window has one or more casements to open, and at the top one or more fan lights casements to open outward, which can conveniently be left open at any time, thus assisting the ventilation of the rooms.

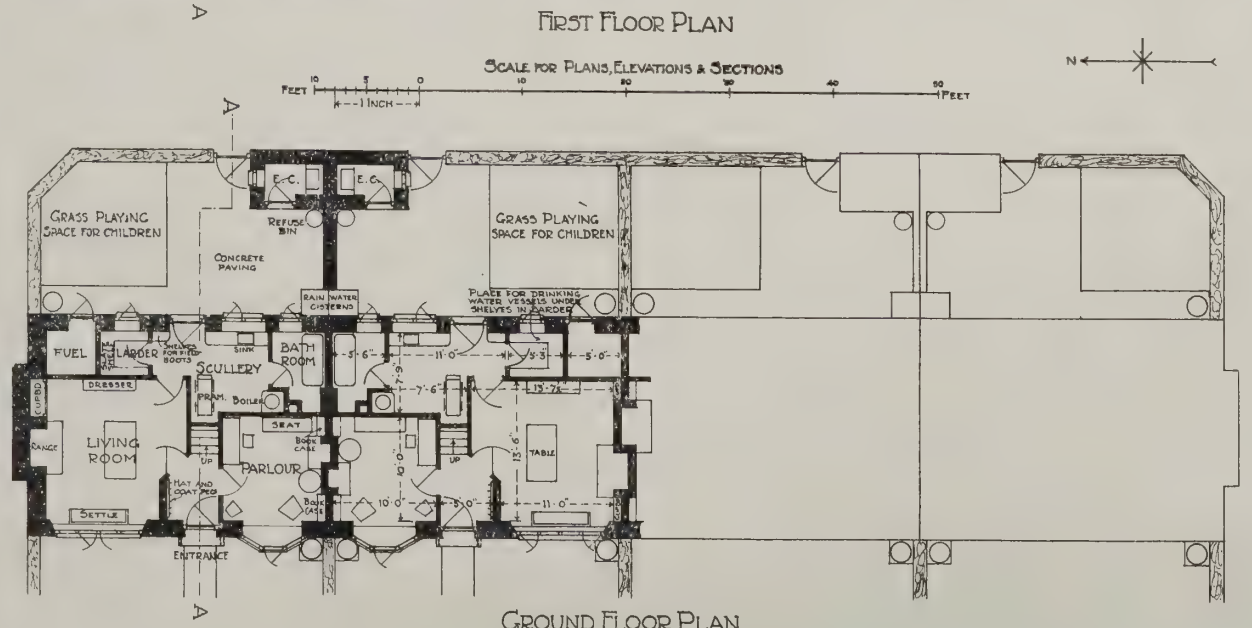
WATER The rain water is collected, and the tanks indicated supply, a small internal cistern which has a regulating ball valve. This cistern supplies the boiler, and from the boiler a hot water service pipe is run to the sink and the bath. When the rain water supply fails, the boiler can be safely filled by hand. The boiler is to be of galvanized wrought iron with cover and steam flue over

ELEVATION OF OUTBUILDING

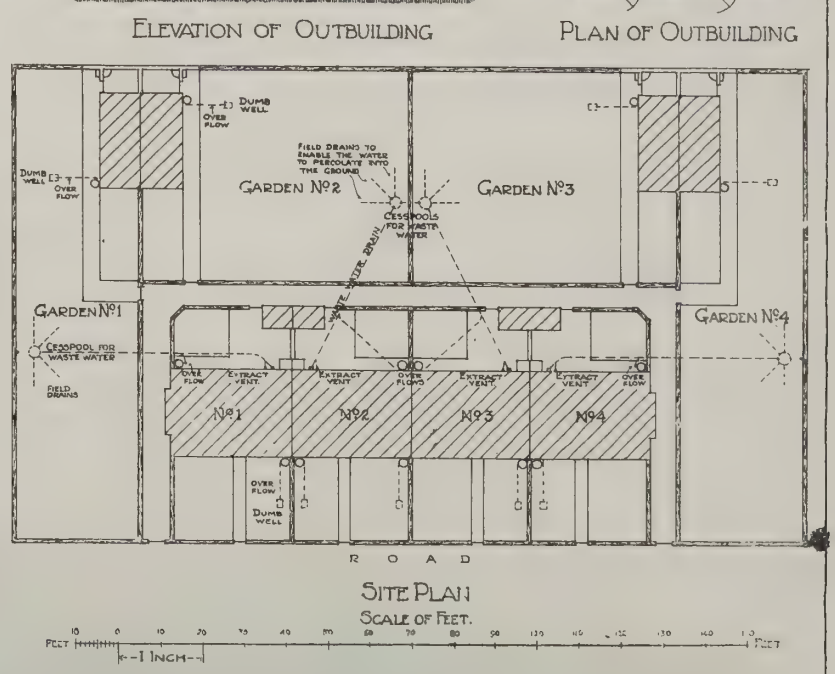


PLAN OF OUTBUILDING

SCALE FOR PLANS, ELEVATIONS & SECTIONS
FEET 10 5 0 10 20 30 40 50 FEET
1 INCH



GROUND FLOOR PLAN



SITE PLAN
SCALE OF FEET.
10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 FEET
1 INCH

Mr. R. Wynn Owen. A.R.I.B.A., Farraline House, Watford, Herts.

PLAN No. 14.

Design by "The Incurables"

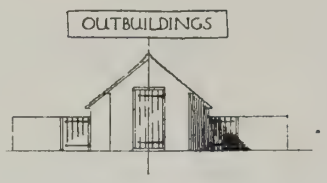
THE ROYAL NATIONAL EISTEDDFOD OF WALES
COTTAGES FOR AGRICULTURAL LABOURERS
CLASS B SUITABLE FOR SOUTH WALES

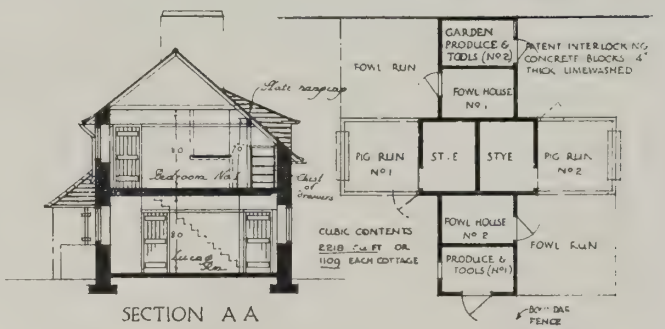
THE ELEVATION TO GARDEN (EAST)

THE ELEVATION TO ROAD (WEST)

The Cottages are so designed that two Bedrooms get the morning sun, the Living Room has both east & west light. The low roof on West side will protect the front wall from wet. An endeavour has been made to avoid the use of lead in roof as far as possible

OUTBUILDINGS





SECTION A A

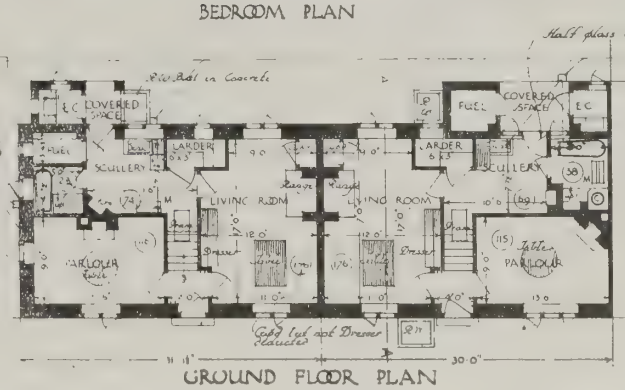
Double beds 6'x3' are shewn in each Bedroom clear of the window. Large Cupds are provided in each room. Has a fireplace
BEDROOM 1
BEDROOM 2
BEDROOM 3
Cupd
Chest Drawers
Table
Bed
Recess for Chest of Drawers is not included in Floor Area

BEDROOM PLAN

Materials
Roof Welsh slate thick Welsh Slates on 4'x2" rafters & 1½"x¾" battens. Hall round ends of Purlins. Walls External 18" local rubble stone or 9" brick & roughcast which ever is most readily obtainable in either case limewashed 18"-0" thick. Internal 4½" brick in cement. Partitions Concrete slabs to Larder & on First Floor. Ground Floor Concrete. Parlour & Living Room Floors wood & covered. Lateral Joistless floorings. Coals C.C. & Covered.

Space generally remainder 9'x9" Red Quarries. First Floor 1st trailer joists. Lateral Concrete reinforced with hollow tubes & laid without castings & finished as Living Room. Windows Concrete frames heads & cills reinforced with ½" Steel bars & iron casements of simple section lead lights or wood frames & casements with cut upper bar & top lights to open where not shewn to sweep. Plate boards to Front doors on stone brackets. Plates in cement. Damp Course & strings

4 GLAZED SOCKETED PIPES JOINTED IN CEMENT



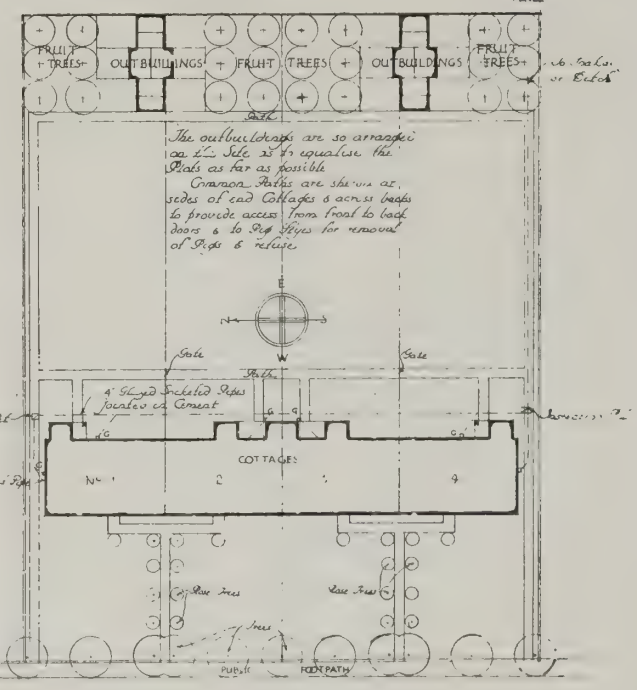
GROUND FLOOR PLAN

Scale Eight feet to an Inch

CUBE CONTENTS

COTTAGE No 2 (18" STONE WALLS)	
30' x 20' x 19' (AVERAGE HEIGHT)	11,400
17'3" x 4'6" x 10'	776
TOTAL (INCLUDING COVERED SPACE)	12,176
WITH 9" BRICK WALLS ROUGHCAST	
30' x 18'6" x 18'6"	10 267
17'3" x 5'-6" x 10'	905
TOTAL	11 172

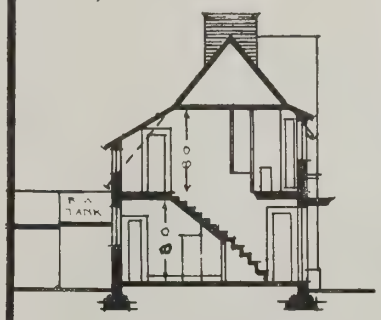
COTTAGE No 1 (18" STONE WALLS)	
31'1½" x 20' x 19'0"	11 827
9'6" x 4'6" x 10'	427
TOTAL (INCLUDING COVERED SPACE	12 254
WITH 9" BRICK WALLS ROUGHCAST	
30'4½" x 18'6" x 18'6"	10 397
9'6" x 4'6" x 10'	427
TOTAL	10 824



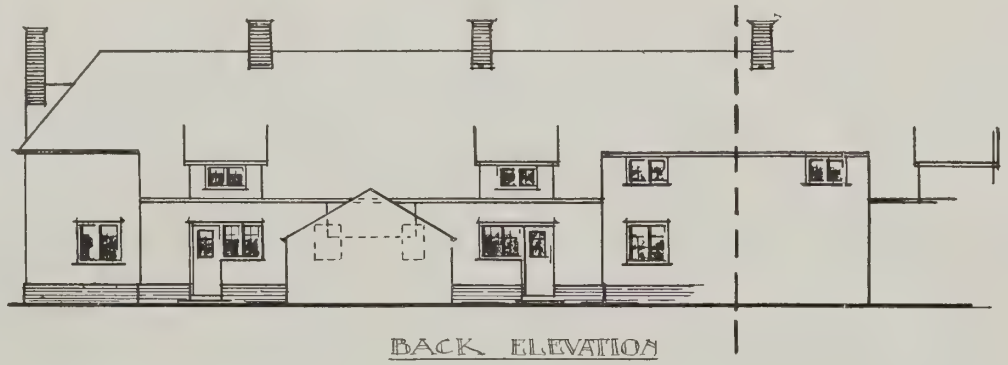
Scale of Feet for Site Plan

Messrs. James & Wands, Architects, 13 Ridley Road. Harlesden, N.W. 10

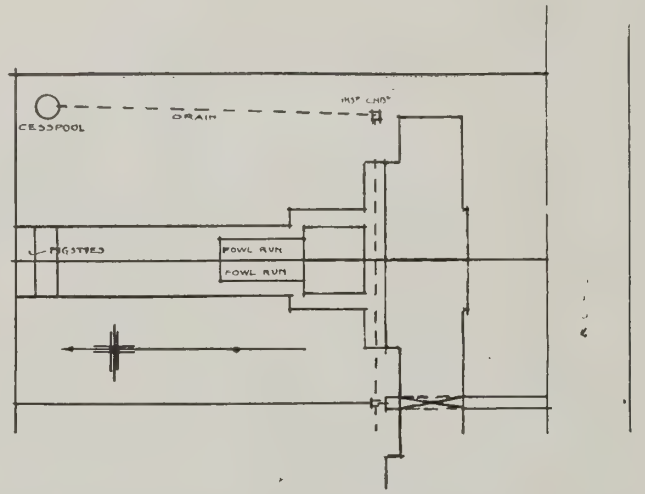
PLAN No. 15



SECTION, AA.



BACK ELEVATION



BLOCK PLAN

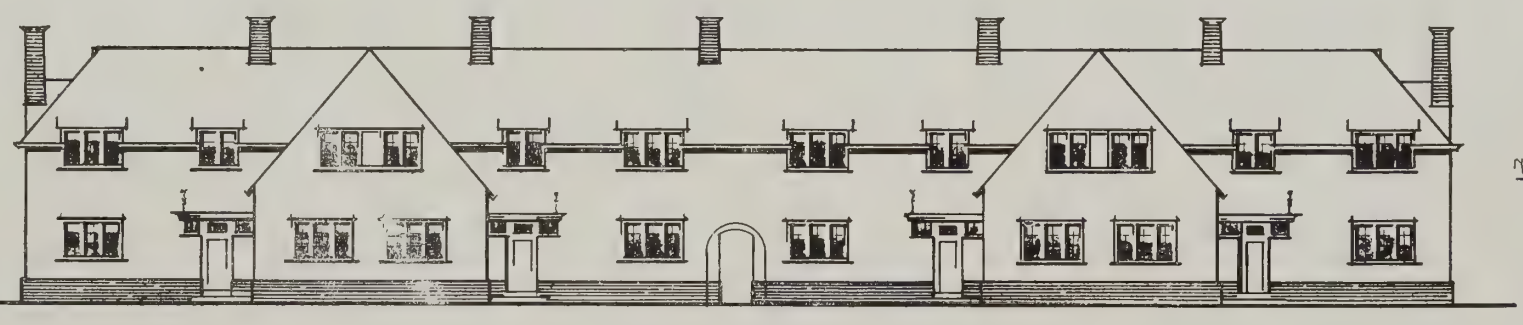
SCALE 20' = 1"

ROYAL NATIONAL EISTEDDFOD OF WALES

COTTAGE COMPETITION

CLASS B.

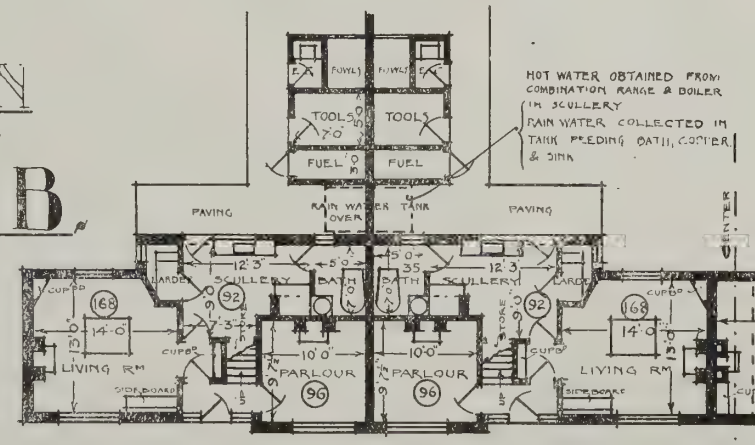
S. WALES



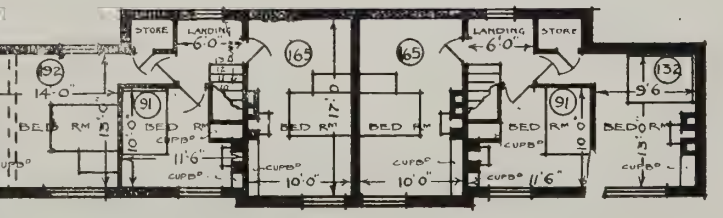
FRONT ELEVATION

NOTES.

WALLS - EXTERNAL - 11" BRICK CAVITY
INTERNAL - 4½" BRICK, 2" SLAB PARTITIONS
FACINGS - EXTERNAL - CEMENT STUCCO
INTERNAL - LIME PLASTER
ROOF - WELSH GREY SLATES
FLOORS - LIVING RM. PARLOUR - WOOD BLOCK ON CONCRETE
SCULLERY, BATH, LARDER ETC. - CEMENT ON CONCRETE.
BEDROOMS - REINFORCED CONCRETE COVERED WITH LINO.
CUBE CONTENTS OF END HOUSE 11,737 C FT EXCLUDING OUTOFFICES



HALF GROUND PLAN



HALF FIRST FLOOR PLAN

SCALE OF FEET

"SNUG"

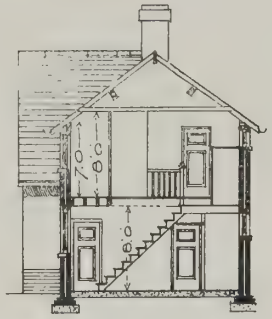
Mr. Chas. A. Broadhead, A.R.I.B.A., Broom Lane, Rotherham

PLAN No. 16

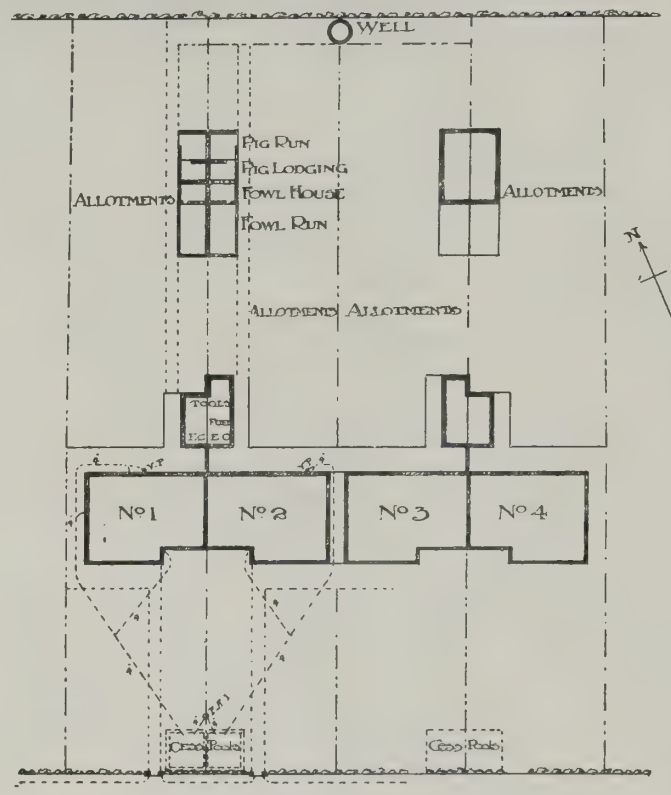
Design for Labourers Cottages Glamorgan Class B

Front Elevation

Half Back Elevation

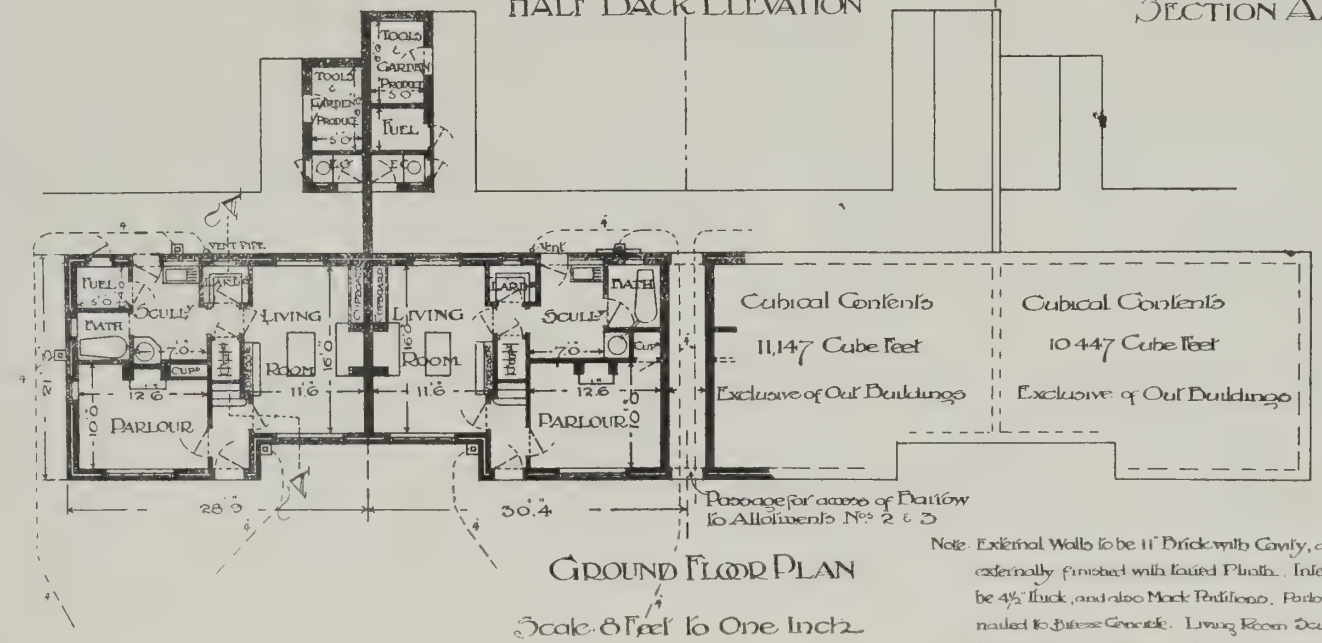


Section AA

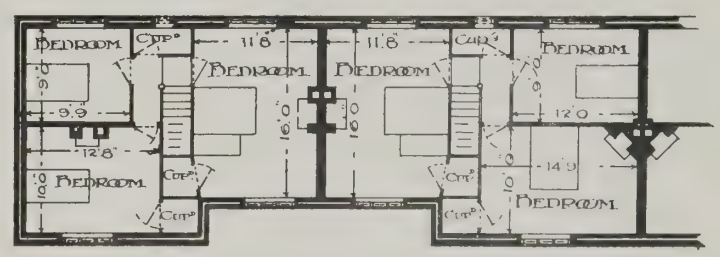


Road

Block Plan
Scale · 20 Feet to One Inch



Ground Floor Plan
Scale · 8 Feet to One Inch



Half First Floor Plan

Note. External Walls to be 11" Brick with Cavity, and limewashed externally finished with Tuscan Plinth. Internal Walls to be 4½" Thick, and also Mock Partitions. Parlour to have boards nailed to Breeze Concrete. Living Room Scullery &c to have Granolithic Floors. Water for Bath to be heated in Copper. Roofs to be covered with Welsh slates.

IVY

Messrs. Eaton & Cooper, 43 The Walk, Tredegarville, Cardiff

PLAN No. 17

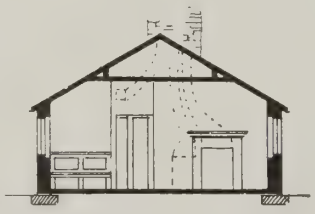
CLASS C

GROUP OF ANGLESEY COTTAGES

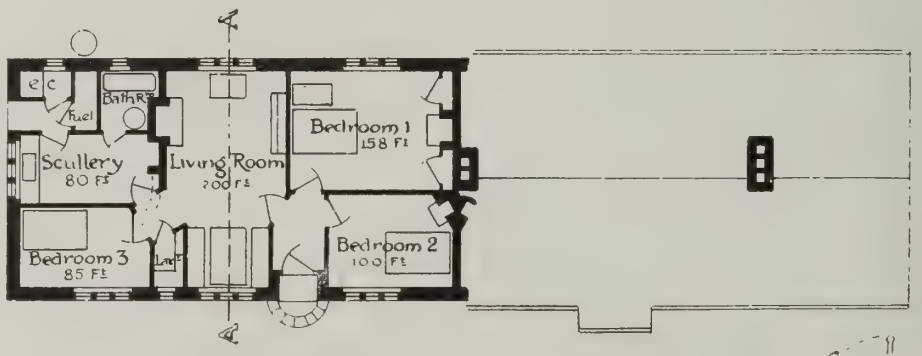
11,000 FEET CUBE

END ELEVATION

ELEVATION

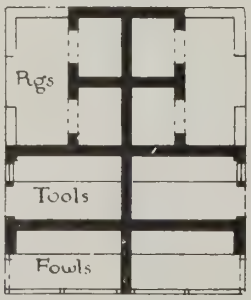


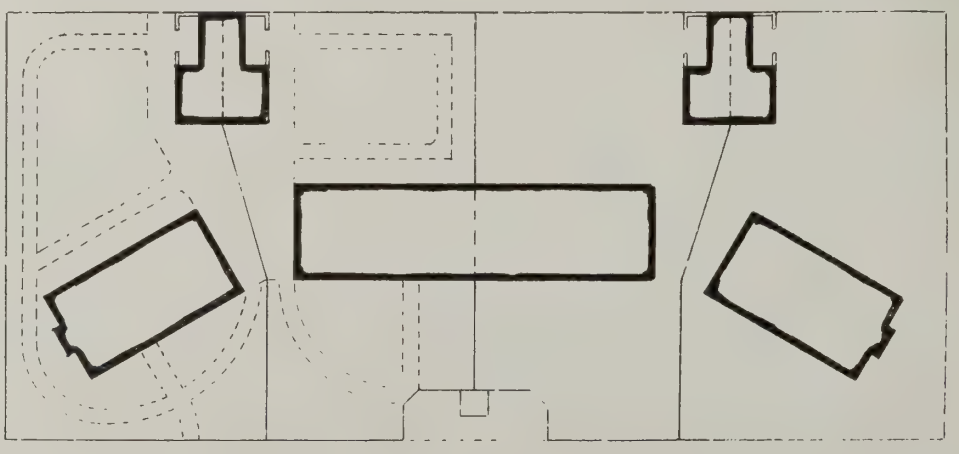
SECTION A A



GROUND PLAN

ROOF PLAN



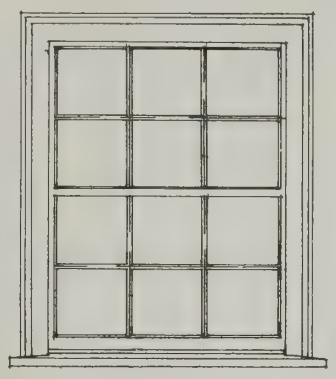


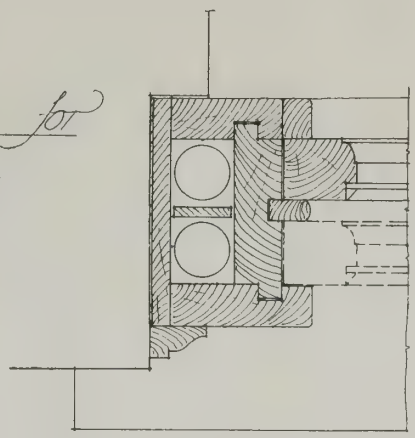
BLOCK PLAN · SCALE 20FT TO 1 INCH

CAMBRENSIS

Mr. E. A. Rickards, F.R.I.B.A., 47 Bedford Square, London, W.C. 1 **PLAN No. 18**

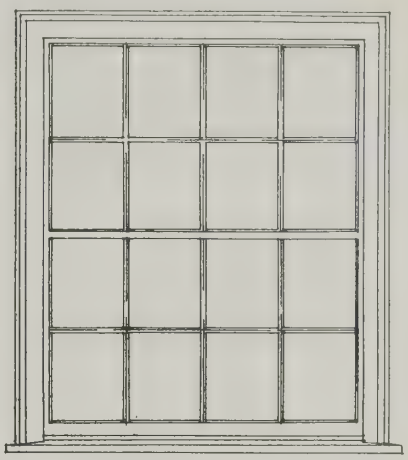
Suggested Design for Sash Windows



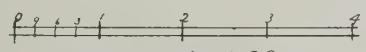


Plan

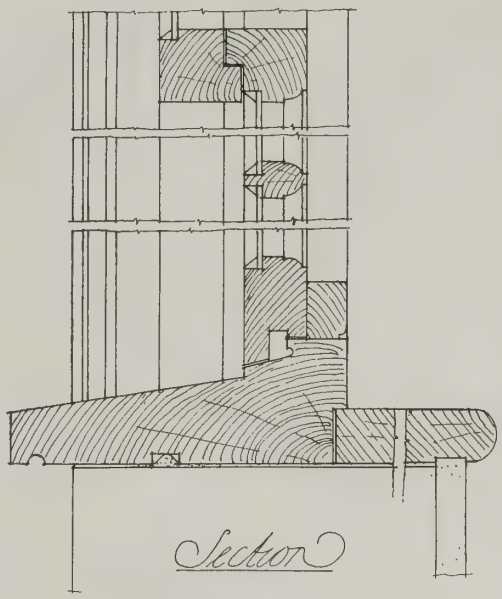
Welsh Housing Committee



Elevation of the Sash Window



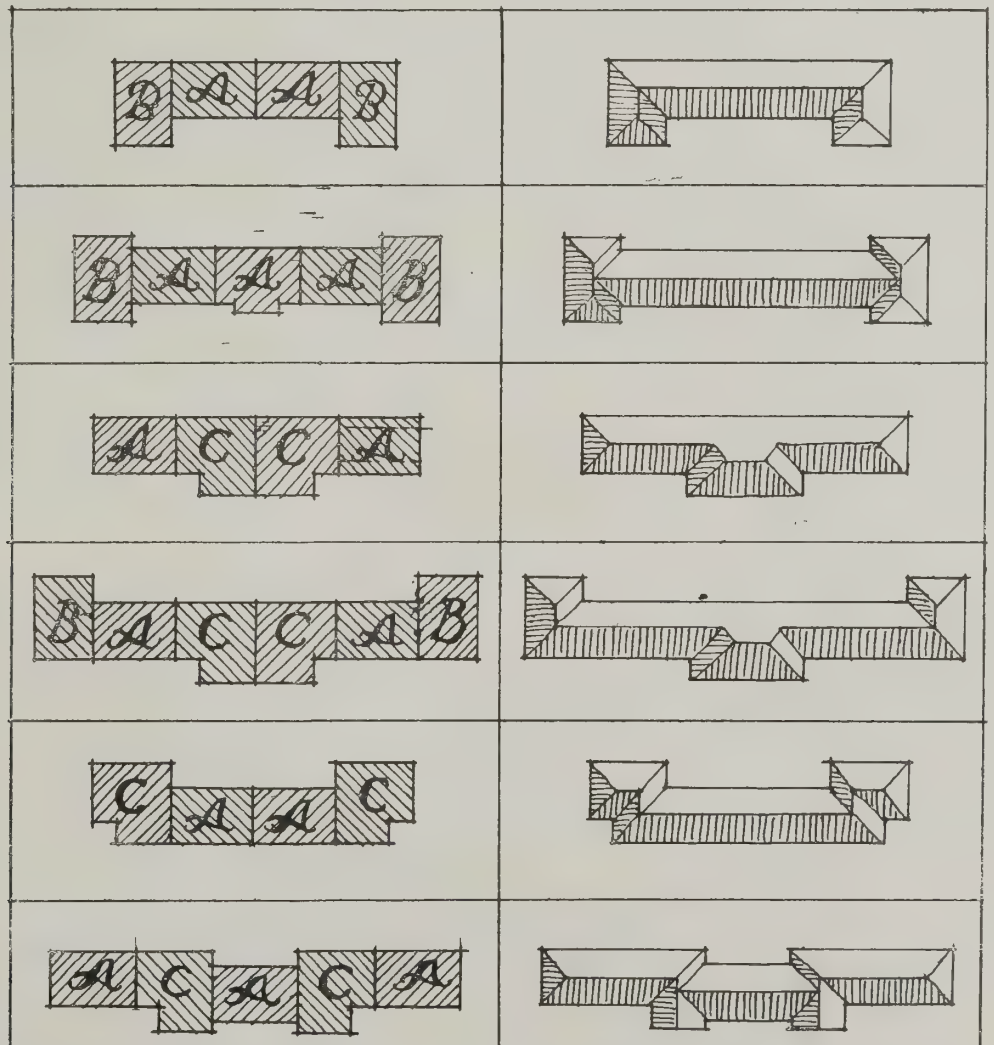
Scale for Windows



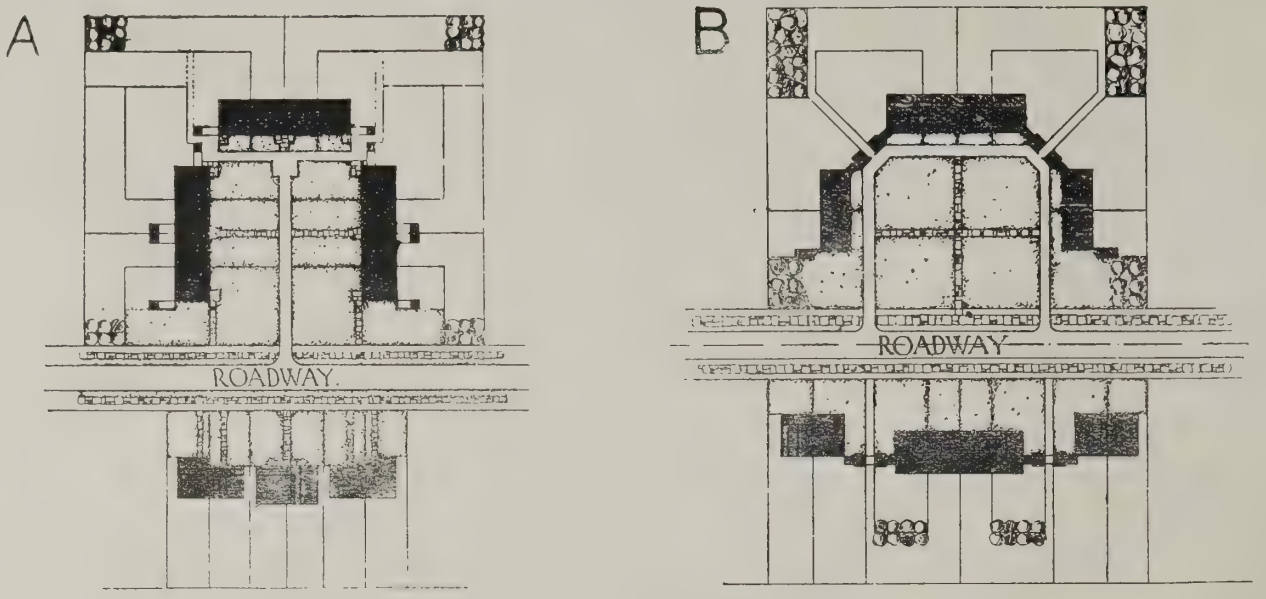
Section

Elevation of the Sash Window

Scale for Plan & Section

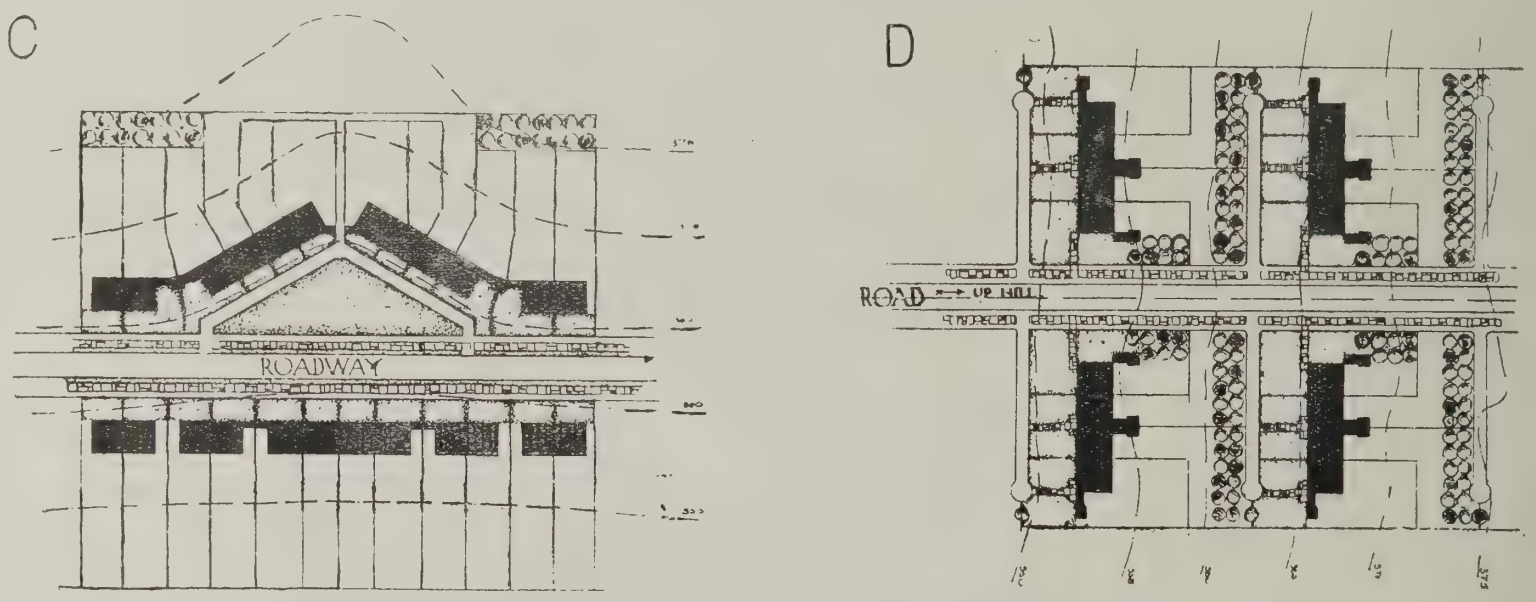


Examples of the Combinations of 3 Units, A, B. C, [each containing the same amount of accommodation] in order to produce variety of Grouping



Examples A and B suggest methods of arranging a number of groups of houses. Where the plots are shallow they may be arranged parallel to the road ; where deep they may be arranged in the form of a hollow square with footpath access, or if deeper still a narrow carriage drive may be substituted for a footpath.

The different aspects will afford opportunities for varying the type of cottage accordingly.

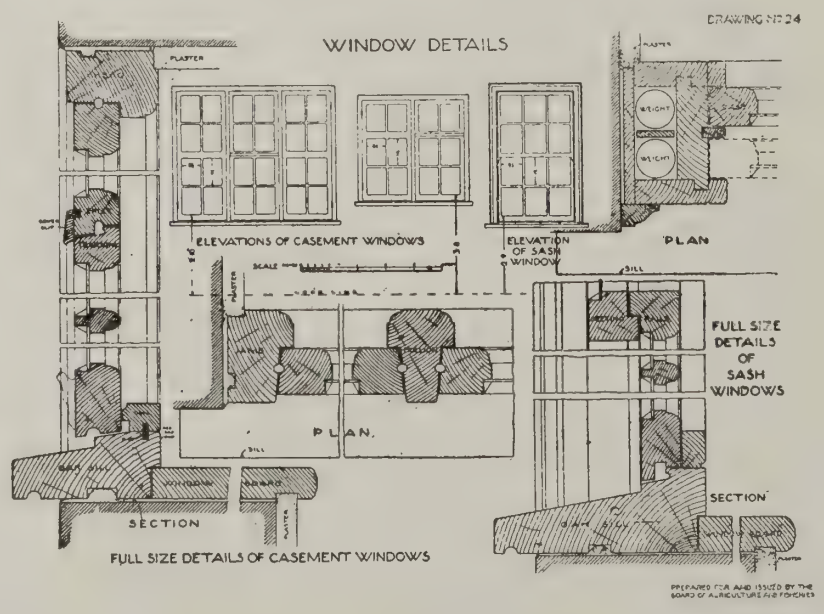


Example C shows how the groups of houses may be arranged to stand with the long dimension level where a shallow valley runs up the site. This would considerably economise foundations if the levels of the site were as indicated by the contour lines.

Example D shows the case of a road running uphill at right angles to the contour lines, in which case it will be economical to set the groups of cottages at right angles to the road. This may also be worth while sometimes to secure a better aspect.

The outbuildings and orchard trees in the gardens may be used to screen the backs of the houses where some privacy may be desired. Where the ends of the group are specially exposed to view some extra care should be devoted to the end elevation.

Design No. 24.



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BUILDINGS NEXT RIVERS
Are made perfectly dry when treated with Pudloed cement on the floors and on the walls.
The free advice of our Engineer is always available. In no case has Pudlo failed to waterproof when our simple instructions have been followed.
HOUSING
Exterior walls have been made of 2⅝-in. concrete slabs
Flat roofs will span 12-ft. 6-in. without girders.
Bay window roofs will span 4-ft. without reinforcement.
These and other suggestions for the use of Pudloed cement are contained in Booklet 15, which treats of the housing problem.

Tested by Faija, Kirkaldy, Cork University. The Japanese & Spanish Governments, and the most eminent experts.

Used for Damp Walls, Flooded Cellars, Leaking Tanks, Flat Roofs, Baths, Concrete Buildings, etc.
Used by the War Office, the Admiralty, the India Office, the G.P.O., the Crown Agents, The Office of Works.

BRITISH! and, apart from patriotism, the best.

Manufactured solely by Kerner-Greenwood & Co., Ltd., Boal St., King's Lynn.

EAVES CONSTRUCTION

THE eaves to a building are not usually considered from the important bearing they have on the sanitary and hygienic conditions of a dwelling.

A dripping eaves—due to faulty metal gutters—means a damp foundation, involving risks of settlement, and also means a damp wall at the ground level, with a consequent insanitary state of the working department of a building. If metal gutters are fixed close to or on the wall, defective eaves means also a damp wall head, again an insanitary condition for the bedrooms.

Overhanging eaves of the usual type require extra lengths of rafters, the feet of which are sometimes exposed, wrot and cut to shape, if they are not exposed a wooden or plastered soffit is fixed instead, this with a wooden fascia to which an iron or zinc gutter is fixed completes the eaves.

Periodic painting is required to the wooden fascia, soffit and metal gutter, and this being all ladder work is the most expensive item of external painting. The metal gutter, in addition, requires renewal every few years due to its decay or its collapse by screws rusting, the failure of brackets, damage by ladder raising, or by snow sliding off the roof, carrying the gutter with it, to the risk of life and property.

IF the metal gutters are fixed level there is every possibility of overflowing due to their filling up from road dust, leaves, etc., whilst if they are laid to a gradient then an unsightly appearance is produced by the difference of level between the gutter bottom and the lower edge of eaves fascia. Again, with overhanging eaves swan-necks are required to conduct the water from the gutter to the rain pipe or rain water head, and, as is well known, swan necks are a frequent cause of blockage and overflow.

The whole weight of an ordinary timber roof is thrown on to the wall plates, which, in turn, distributes it mainly on that portion of the wall directly underneath, in the case of hollow walls the whole weight of the roof is thrown on to, usually, a $4\frac{1}{2}$in. wall, which has been known to collapse under its excessive load.

The foregoing are the conditions which property owners have had to endure from generations of orthodox building construction.

The present scarcity and high cost of timber, metal gutters and building materials generally, has necessitated serious consideration for revised and economic methods of future building constructions and as a result it is with every confidence in its merits that

THE ECONOMIC EAVES

(PATENT 115388) IS INTRODUCED AS BEING THE ONLY

PERFECT - EAVES - CONSTRUCTION

WHICH IS PARTICULARLY SUITED FOR

HOUSING - AND - TOWN - PLANNING - SCHEMES

PRIMARILY, **THE ECONOMIC EAVES** is economic in every way, being at least one-third less in initial cost than the usual overhanging types, whilst periodic maintenance and repair are abolished.

N.B.—Its adoption to the National Housing Scheme of 300,000 houses would result in an initial saving of £1,500,000, a sum sufficient to build an additional 4,000 to 5,000 houses, whilst its saving in periodic maintenance would be sufficient to provide automatically half that number of houses.

This vast national economy would be effected not by reducing the stability or appearance of the building by the introduction of thinner walls or inferior furnishings in the form of joinery or other finishings, but by substituting a practical, up-to-date method of construction which materially increases stability, increases in strength with age, saves essential materials and greatly reduces labour problems by its simplicity.

THE ECONOMIC EAVES is suitable for thin or thick walls, and from its monolithic character it adds materially to the strength of the structure, forming a continuous beam or lintol on which the roof superstructure rests, thus counteracting any possible damage to roof work by the settlement of walls under the eaves course. This is particularly noticeable in hollow wall construction where **THE ECONOMIC EAVES,** acting as a binding course, not only are the two thicknesses tied together, but the roof weight is also uniformly distributed on to both sections of the wall, a very marked improvement over the usual type of construction.

RECENT Government Reports on "Housing" emphasise the advisability of using materials procurable locally. **THE ECONOMIC EAVES** absolutely meets this recommendation, by being formed with materials of home production, the bulk of which can generally be obtained locally. There is, therefore, no delay in transit or congestion of transport. **THE ECONOMIC EAVES** always presents a perfect alignment, although the channel is laid to a gradient, and this channel being glazed offers less opportunity to silt up as it is kept clean with every fall of rain. Straight pipes are used from the outlets instead of swan-necks, therefore the risk of blockage is avoided.

The solid nature of **THE ECONOMIC EAVES** offers increased facilities for raising ladders against it for roof repairs. Metal gutters are constantly being damaged in this respect. It cannot be swept away by snow slides, therefore there is no risk to life and property. Improved hygienic conditions exist by its adoption from the reduction of "air-lock" between the window head and the ceiling level, thus ensuring freer ventilation and quicker removal of vitiated air.

The L.G.B. (Scotland) Memorandum on Housing states:

"It will generally be desirable to provide "overhanging eaves. These give a pleasing "effect and also afford considerable protection "to the walls. The ends of rafters and boarding "should not be exposed, otherwise a considerable "upkeep in painter work is involved."

THE ECONOMIC EAVES again absolutely fulfils these conditions by being an overhanging eaves with a pleasing appearance without any upkeep of painter's work.

FOR ILLUSTRATED PARTICULARS OR ANY OTHER INFORMATION APPLY

THE ECONOMIC EAVES CO.

9 SOUTHAMPTON STREET, BLOOMSBURY W.C. 1

SEWAGE PURIFICATION FOR COUNTRY HOUSES, VILLAGES, ETC.

THIS installation, which includes primary and secondary aerobic filters, was designed by us in competition for the Welsh National Memorial Association Sanatorium, for E. T. Hall, F.R.I.B.A., the Architect for the building. Our design was selected by Mr. Hall, in conjunction with Mr. Howard Humphreys, M.I.C.E., and the apparatus was manufactured and the entire work carried out by our own workmen.

ESTATE OFFICE,
ABERFORD, LEEDS.

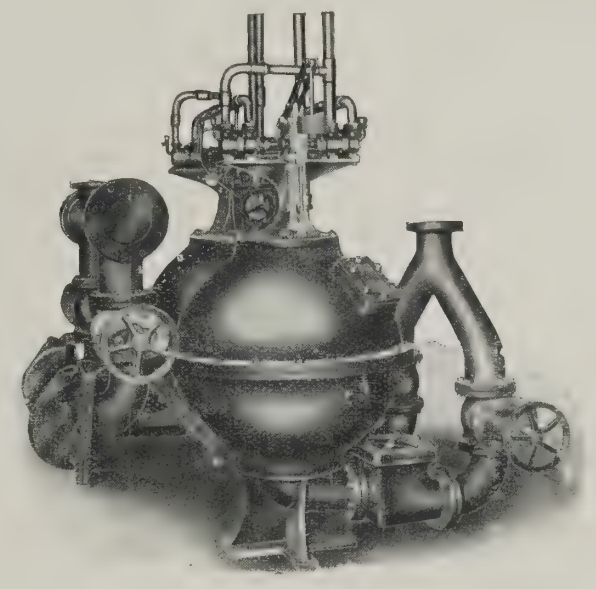
Dear Sirs,—I have found Messrs. Tuke and Bell's sewage installation to be quite the best I have ever put down. It is very simple to manage, and in my opinion very reasonable in price, and the work is carried out expeditiously, and they are a most pleasant firm to deal with

It is admirably suited for farmhouse sewage, and it deals particularly well with the most troublesome effluent one gets from soapsuds and washing water.

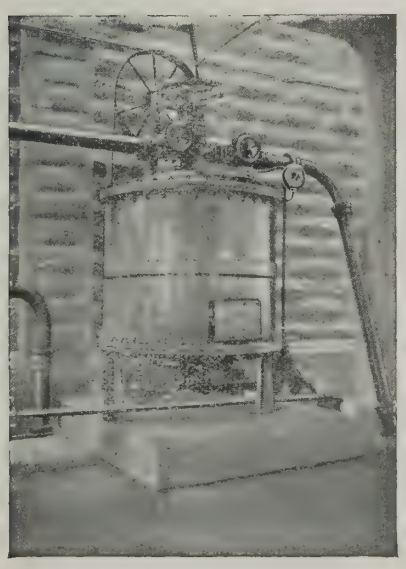
I put this small plant down for a country mansion where there is the usual amount of sewage from water-closets, sinks, etc., and also from a large laundry. It has been run for two years and never given half an hour's trouble.

I shall be very pleased to answer any further questions, and if you would like to inspect it I should be happy to have it shown to you.

Yours faithfully,
(Signed) T. H. PRATER
Agent to Col. Gascoigne, D.S.O.)



TUKE & BELL'S PATENT AIR DISPLACEMENT PUMPS FOR RAISING SEWAGE OR OTHER LIQUIDS IN CONNECTION WITH PURIFICATION SCHEMES.



Water Softening Water Filtration

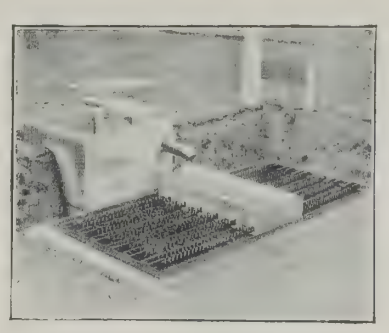
THE illustrations show first, a Pressure Water Filter, designed, manufactured, and fixed by us for the Tottenham & District Light, Heat & Power Co. to deal with 48,000 gallons per day. The second illustration shows our Patent Water Softener, designed, manufactured and fixed by us for H.M. Office of Works, for the National Filling Factory, Coventry, capacity 72,000 gallons per day.

THE importance of soft, pure water for Industrial and Domestic purposes has of recent years received an extended appreciation from all sections of the community. Brought at first into prominence from an hygienic point of view, the purification of water is now in the industrial world of almost equal importance from an economic standpoint. While the removal of suspended matter in water supplies is sufficient for certain industrial processes, in others. such as the production of steam, the removal of the no less harmful though invisible matter in solution which causes hardness, is necessary to prevent the deterioration and corrosion of boilers as well as the danger of explosion due to the overheating of the plates when scale is present.

In other processes, where soap is used, laundries for instance, the great saving of soap is out of all proportion to the small cost of purifying and softening. In domestic supplies, pure soft water has not only hygienic value but will more than repay its cost by preventing furring up of hot water pipes and apparatus.

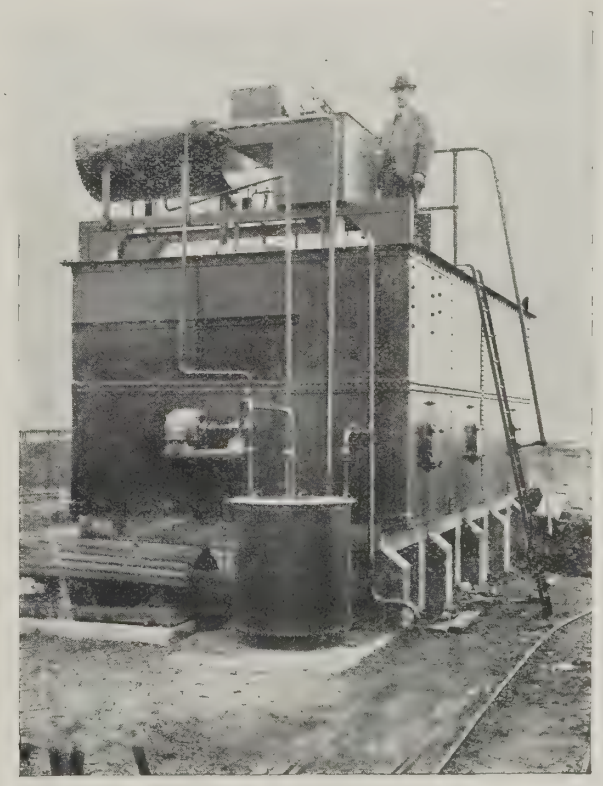
THE softening process was first introduced by Dr Clarke, over 60 years ago, and briefly consists in adding to the water to be treated, a definite proportion of pure hydrate of lime, to remove the temporary hardness, and a definite proportion of sodium carbonate to remove what is known as permanent hardness, where it is necessary to do so The Domestic Softener is not illustrated, but is of a convenient size for use in the cistern room of an ordinary house, and is specially designed to provide automatic working, requiring the minimum of attention for the production of soft water for the family laundry, as well as for water of a soft velvety nature for ablution purposes. Samples of water analysed free, and reports submitted in connection with both filtration and softening.

TUKE & BELL, Ld.
The Carlton Engineering Works, 599 High Road, Tottenham, London, N.



DURING the last four years owing to the demands of the Government for Sewage and Water Apparatus for Army and Munition Works purposes, we have developed a manufacturing organisation with Wood Working, Sheet Metal, Machine and Fitting Shops. Forges and Power Hammers, and have turned out large quantities of Field Water Filters, Water Softeners, Sewage Distributors and Ejectors. The added experience so gained has, we think, increased the efficiency of our Technical Staff. We would ask our numerous Clients to instruct us NOW regarding the projected Schemes in hand at the outbreak of the War, and assure them of that personal care and attention of which, on so many occasions, our Clients have kindly expressed their appreciation. New booklet on request.

ACESSPOOL might have had some excuse when designed to take small quantities of slop water. It can never be anything but a hopeless nuisance when expected to take daily 30 or 40 gallons of liquid and solid waste for every person who is in the house. It has been proved during the last ten or fifteen years by the experience of our towns and cities that sewage may be thoroughly purified by a combined septic and aerobic bacterial action. We have during this period worked on this recognised system, and devised modifications of the same which produce equally satisfactory results for the small volumes from Isolated Country Houses, Hospitals, Sanatoria, Schools, Farms, Groups of Cottages, Factories and Villages. We have designed and carried out hundreds of installations in all parts of the world, and are able to give definite guarantees for successful working.



WATER SOFTENER AT A NATIONAL FILLING FACTORY

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LONDON, N. 17
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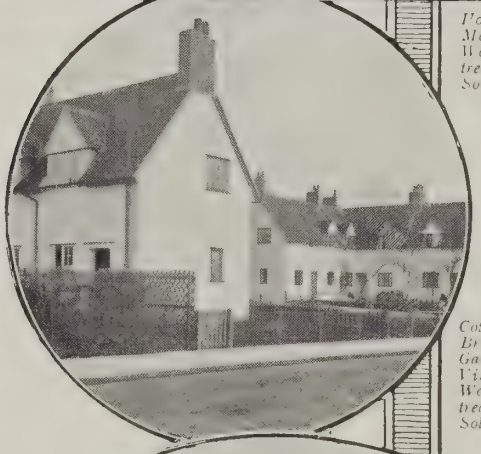
House near Maidenhead, Woodwork treated with Solignum



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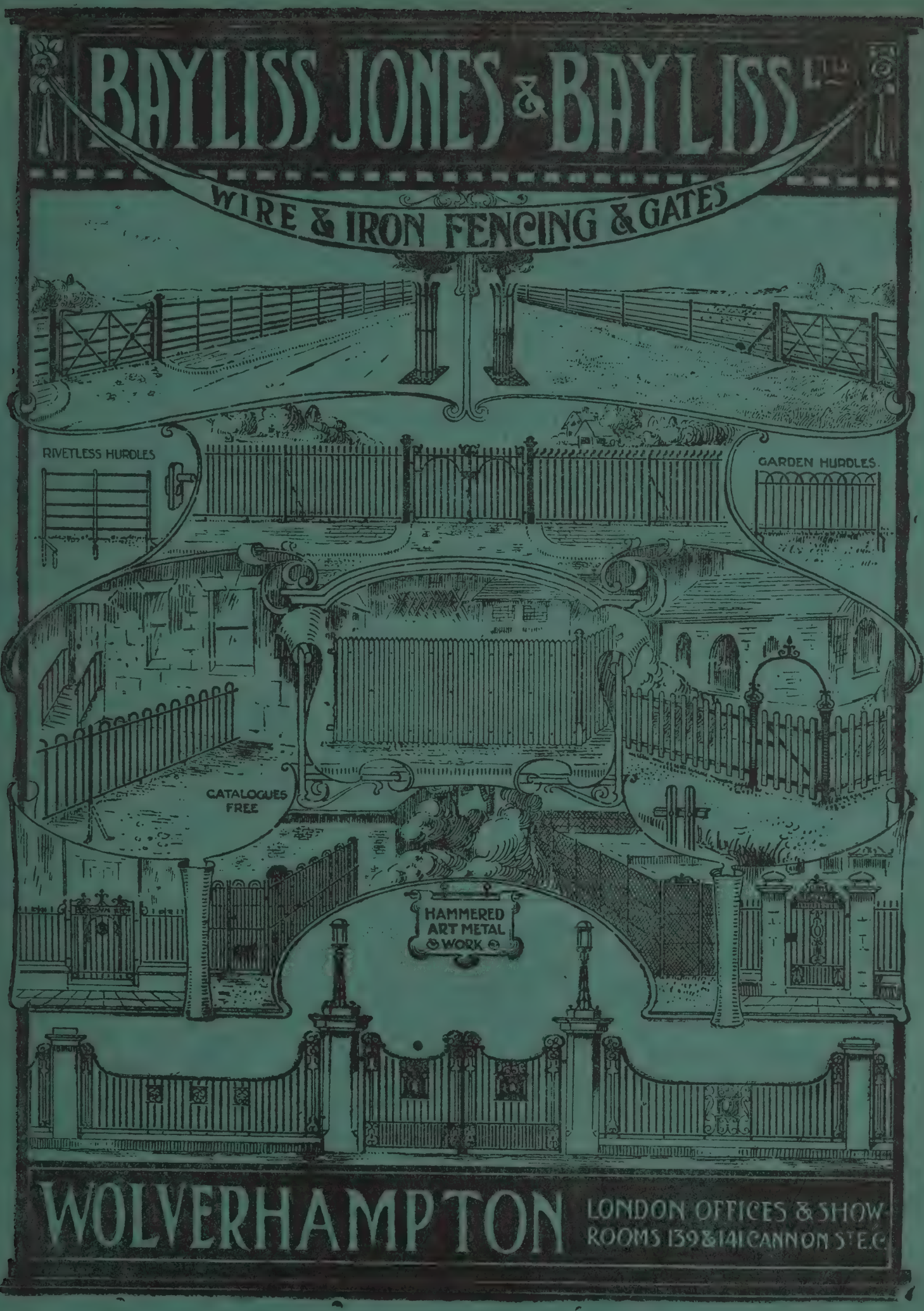

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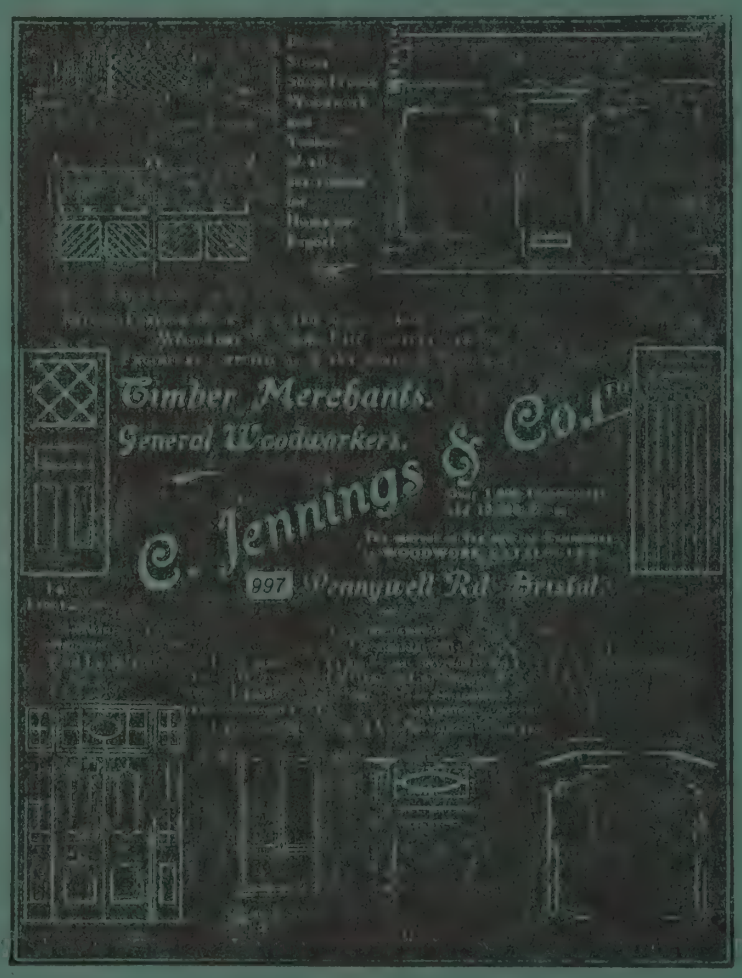

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